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CONDITIONS UNDER WHICH LEPROSY HAS DECLINED IN ICELAND.

BY

EDWARD H. EHLERS, M.D.

LEPROSY IN SOUTH AFRICA.

BY

S. P. IMPEY, M.D., M.C.

ON SPONTANEOUS RECOVERY FROM LEPROSY.

BY

S. P. IMPEY, M.D., M.C.

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ON THE

CONDITIONS UNDER WHICH LEPROSY HAS DECLINED IN ICELAND,

AND THE

EXTENT OF ITS FORMER AND PRESENT PREVALENCE.

BY

EDWARD EHLERS, M.D.,
COPENHAGEN.

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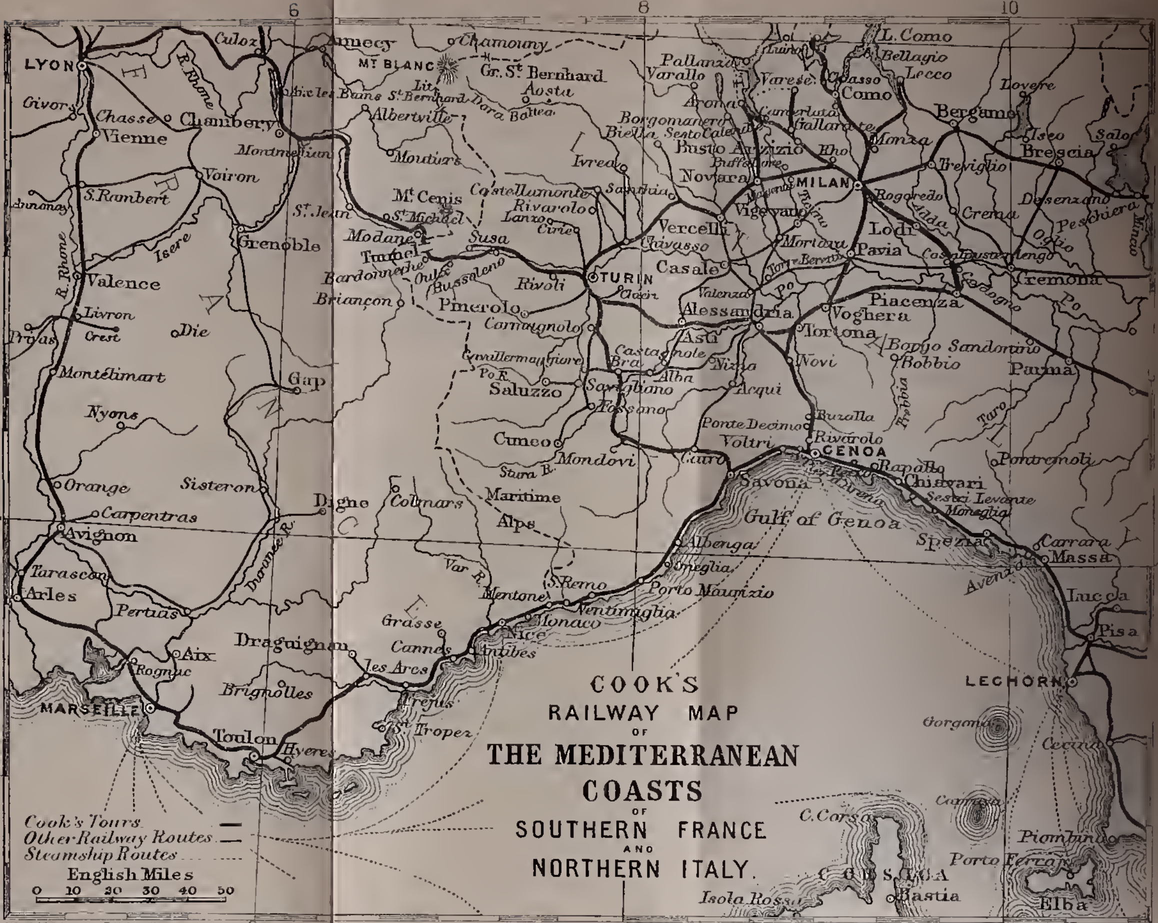

COOK'S

RAILWAY MAP

OF

THE MEDITERRANEAN

COASTS

OF

SOUTHERN FRANCE

AND

NORTHERN ITALY.

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CONDITIONS UNDER WHICH LEPROSY HAS DECLINED IN ICELAND.

HISTORY.

In the Icelandic language leprosy has received various names, among which Holdsveiki, *i. e.* disease of the flesh, seems to be the most recent. The older names are likthrár (derived from lik, a corpse, and thrár, rancid), employed for the tuberous form, and limafallssyki (the limbs-falling-off disease), which expresses the anæsthetic form.

It cannot be decided with certainty at what period leprosy first made its appearance in the island. The vice-superintendent Eggert-Olafsen, and the physician Bjarne Povelsen,[1] who, during the years 1752–57, as students traversed Iceland, were of the opinion that the disease "was as old as the inhabitants themselves, who probably had brought it from Norway."

Dr. Gislasen, an Icelander, who was physician at Drammen (Norway), and as such wrote his thesis for the diploma of doctor, upon leprosy,[2] was, however, of the opinion that the disease was first brought to Norway about the end of the thirteenth century, probably from the Crusades.

Gislasen did not think that any positive proof could be given of the existence of the disease previous to a Testamentum by King Magnus Lagabæter in the year 1277,[3] in which it is said: "Item ad Ospitale Catharinæ Leprosorum Bergis centum marcas sterlingorum contulimus." Hjaltelin,[1] on the contrary, adopts the opinion of Olafsen and Povelsen, and declares that the disease is mentioned here and there in the old legends. He points out some such cases, to which I, with the help of the dictionaries of the old Norse language, am able to add a few.

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[1] 'Voyage through Iceland,' vol. ii, Soröe, 1772, p. 325 (Danish).

[2] 'De Elephantiasi Norvegica,' Hauniæ, 1785.

[3] Ed. Hafniæ, 1719, p. 14.

§

We are only concerned with the word likthrár; the other expressions, holdsveiki and limafallssyki, are not to be found in the legends, and no trace of the disease exists before the twelfth and thirteenth centuries.

No doubt, in the legend concerning Olaf Tryggvason,[2] the action of which takes place before the year 1000, a story about a man, by name Thorhal Knapp, from Knapstad in Fljot, is mentioned: "he was a man of good and pure morals, though a heathen, but much suffering and afflicted by leprosy." One night he dreamed that King Olaf stood before him, and counselled him to build a church, and construct it of the timber of his old sacrificial temple, then he would be cured. Of course the man did it; and the old gods, who now were homeless, became so angry, that they, in moving away, killed a jade belonging to a woman, who, though quite innocent, "was very active and versed in witchcraft." But the leprous man "day by day got better, and recovered his strength." Next year he adopted the Christian faith, "and then he first was perfectly cured, on the day he was baptised." It is a matter of course that this myth never can prove that leprosy was known before the battle of Svold, year 1000, but only that the writer knew the name of the disease.

Gislasen is inclined to believe that Gúnnlög, a monk, who wrote this legend two hundred years afterwards, "in accordance with monastic custom, adorned the life of the sainted king with this miracle, rather than tell the truth."

In the Ljos-vetninga saga[3] another leprous patient is mentioned; but he has nothing to do with the story.

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[1] 'Leprosy, with Special Reference to its Appearance in Iceland,' Copenhagen, 1843 (Danish).

[2] 'Fornmanna sögur,' vol. ii, Copenh., 1826, chap. 227, p. 229 (Icelandic).

[3] 'Ljos vetninga Saga,' Copenh., 1830, p. 98 (Icelandic).

This saga, which refers to Iceland, was most probably written in the last half of the twelfth century, "after Ketill had been created a bishop." He was bishop from 1122 to 1145.

In 'Konge spejlet'[1] (speculum regale-konungs skuggsjá), a philosophico-didactical treatise which appeared in Norway towards the end of the twelfth, or at least not later than the beginning of the thirteenth century, the word likthrár is used at page 37 referring to the disease of Job, and at page 32 it is mentioned that the sperm of a whale called red whale (probably spermaceti), "is good for the cure of disease of the eyes, leprosy, tremor, headaches, and all sickness that may befall men."[2]

The earlier Gulathingslov, 298/5[3] freed all lepers from war contribution. Conrad Maurer[4] dates the origin of this law to the beginning of the thirteenth century.

Finally the disease is mentioned in the legend of "Sturlög" the industrious: a person named Framar demands and gets from three sorcerers the power to make himself leprous and well again whenever he pleased. Rafn[5] (in his preface to the edition) supposes this legend to have been composed in the thirteenth and fourteenth centuries.

Neither as regards Norway, Denmark, nor Iceland can leprosy thus be traced with certainty further back than the end of the twelfth century.

The supposition of Olafsen, Povelsen and Hjaltelin, that leprosy was known in Iceland before the commencement of the Crusades, must therefore be said to want any solid foundation.

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[1] The Christiania edition, 1848.

[2] The therapeutic value of spermaceti against leprosy gives very favourable evidence regarding the knowledge of the writer of the 'Kongespejl.,' as it is much to be preferred to the ignorant and "miraculous" treatment employed during the fourteenth century. Thanks to the assistant librarian, Dr. Verner Dahlerup, who has given me several useful hints and much good advice, I am able to cite the following example:—In a Danish medical book of the fourteenth century (the 'Arnamagnæanic Manuscript,' No. 187, 8vo, edited by Saaby) it is recommended to smear persons attacked with "spytæls sot" with the blood of a male goat. At another place it is said: "If you have got the disease (leprosy), take some ants and the ant-hill, put it in your bath, and you will be cured."

[3] 'Old Laws of Norway up to 1837,' vol. l, p. 97 (Icelandic).

[4] 'The History of the Original Texts of North German Laws' (Danish).

[5] 'Fornaldar sögur,' vol. iii, p. 642, chap. xxv (Icelandic).

Iceland got its first inhabitants from Norway, and most probably its first case of leprosy from the same place : that is all that can be said ; the exact time cannot be fixed, with regard specially to Iceland. The greatest probability points to the end of the twelfth century.

Towards the middle of the sixteenth century, leprosy seems to have obtained more hold of the island, and to have become so extensive that a dread was created in the hearts of the Icelanders, which is so touchingly manifested in the report of Gislasen about this period. He says that they never mentioned the name of the disease without at the same time adding, "May God in His mercy save us ! "

As early as in the year 1555, the authorities of the island, together with the chief officer, Knud Steensen, made preparations[1] for the erection of four leper asylums, but the proposal was first realised by a royal edict of the 10th of May, 1651, which decided upon the erection of an hospital in each quarter of the island.

These hospitals were supported in the following way :— All the fishermen round the country were appointed to meet on a certain day during the fishing season, on which day they had to give up a certain proportion of their catch, unless it amounted to less than five good-sized cod, or their equivalent, the hospitals then receiving their share next day. Following this rule, the catch was divided into eight parts instead of the usual seven, and one of these was due to the hospitals. The bishop and the superintendents of each county were inspectors, while well-known and honourable men were elected superintendents of the hospitals. They lived on adjacent farms, and had to provide the patients with what was necessary, and to render an account of the income.

The four hospitals were: in the western division, Hallbjarnareyra, in Öresvejten (a farm in the district of Snefjell) ; in the northern division, on Madrefell, in the district of Öfjord ; for the eastern part, on Horgsland ; that for the southern part was situated at Klösterhole in Grimsnes, until the year 1750, when it was moved to Kaldadernæs, at Floen, a short distance from the harbour of Örebakke.

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[1] 'The Voyage of Olafsen and Povelsen,' vol. i, p. 325.

This installation of the hospitals, with everything necessary for their support, their "inspectors" and "honourable men," looks certainly very nice on paper, but if we follow the reports of Hjaltelin,[1] the impression left is not so favourable.

He visited the two largest of them, those of Kaldadernæs and Hallbjarnareyra, and he was bound to admit "that these miserable huts were more like pigsties and cow-houses, to say the least of them, than sick-chambers. The stink and filth were so abominable, that only those accustomed to such dirt could stand a prolonged stay there without being themselves sick, and these hospitals were only a sad example of how the Icelanders stood as regards their medical institutions, and of how patiently they suffered in their passion for tradition, endeavouring in this instance to maintain the institutions of the Middle Ages."

The great smallpox epidemic in Iceland in 1707, which destroyed more than one third of the population, made away with the greater part of the leprous families. How many there were in the eighteenth century I have not been able to discover; but as regards the year 1768 their total is, in a letter to Johs. Petersen,[2] calculated to be upwards of 280. This number was further diminished by the very sensible law of the 28th of March, 1776, which put a stop to marriage between lepers.[3]

Lepers in Iceland, as elsewhere, appear at this time to have been isolated from intercourse with the rest of the population. Thus Johannes Petersen (l. c., page 42), who considers the disease contagious, says: "it is not sufficient that these miserable beings are tormented by the disease, but, like the impure of the Old Testament, they are shunned and abhorred by most people, and this isolation of course makes them still more wretched."

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[1] Loc. cit., p. 43.

[2] 'The so-called Icelandic scorbutus,' Sorö, 1769, p. 9 (Danish).

[3] Further enjoined by a law of December 7th, 1827, and by a circular from the Department of Justice, May 30th, 1848.

It is only since the beginning of this century that a register of mortality has been kept in Iceland, thus enabling one to ascertain the number of lepers. Hjaltelin,[1] with regard to the years 1802–37, calculated the number of deaths from leprosy and scorbutus together, because these two maladies, following the doctrine of Boerhaave as to leprosy being the last phase of scorbutus, were amalgamated. Hjaltelin was of the opinion that there is much reason to believe that the greater number of those registered as having died from scorbutus really died from leprosy.

The total number of lepers who died during the years 1800–37 inclusive would then amount to 707, which for these thirty-seven years (there is no report for the year 1824) gives a yearly average of 19·3; and as hardly any Icelander, according to Hjaltelin, could be deceived with regard to the disease in its last stage, he guarantees that the mortality has been nowhere calculated too high.

The number of deaths from leprosy and scorbutus together during the same period amounts to 943; this gives an average of 26·19.

In 1837 the Bishop St. Johnsen ordered his clergy to make a report of the number of lepers found in their respective parishes; the result was 128 (68 men and 60 women). But Hjaltelin justly criticises this summing-up as being very deficient and imperfect, as, firstly, it is not to be expected that clergymen "not skilled in medicine, should be able to recognise the disease before its more advanced stage; and, secondly, in consonance with Icelandic usage, it is only customary to call those persons lepers who are suffering from Lepra nodosa, while those afflicted with Lepra squamosa or Psoriasis leprodes seldom, or at least only at a few places, are regarded as leprous." As a fact he found this report so defective, that in one parish where the number of lepers according to the report was stated to be 13, he met with 22 leprous patients, all of whom had been affected when the clergyman was collecting his statistics.

He (Hjaltelin) estimated the number of lepers on the island to be 289, at which number he arrived by multiplying the average of the yearly number of deceased by 8, which last number he considers the average duration of the leprous disease. Hjaltelin supposed the disease to be increasing in this time.

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[1] Loc. cit., p. 39.

During the great measles epidemic in 1846, great numbers of lepers died, and the number of survivors was calculated to be only 66, of whom one third lived in the district of Gullbringe (see 'The Voyage of Schleisner').[1]

As leprosy was considered now to be decreasing all over the country, the miserable hospitals were abolished, according to a royal mandate of the 23rd of August, 1848.

During the year 1872, the lepers were again counted by the clergy[2] in 151 parishes (the whole island consists of 184 parishes). Altogether 43 leprous patients were found, out of whom 36 presented the tuberous form, 7 the anæsthetic. These last-mentioned, with one exception, all belonged to the district of Gullbringe.

The apportionment was: in the southern division 19, in the western division 13, in the northern division 11, in the eastern division 0.

The population of Iceland in 1870 was 69,763 inhabitants. With regard to these statistics, the same objection, no doubt, may be urged as Hjaltelin pleaded against Bishop St. Johnsen's.

Finsen[3] in nine years observed 22 cases in his own districts (those of Öfjord and Thingö), where Schleisner (1847) only counted 2. It is, however, evident from his notes that a comparatively great number of these cases originated in other districts; thus 6 out of 14 cases he observed during the period 1857–61 (both years inclusive); nevertheless sufficient remain to make one believe that the reckoning of Schleisner was incorrect, or, as Finsen expresses himself, "that the disease at this time was more frequent than at the time when Schleisner made his observations."

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[1] 'Iceland from a Medical View' (Danish), Copenhagen, 1847.

[2] 'The Annual Report of the Board of Health,' 1873, p. 374 (Danish).

[3] 'Observations regarding Maladies in Iceland:' a thesis for the diploma of M.D. Copenhagen, 1874, p. 53 (Danish).

Finally, in 1869 the number of lepers was stated to be 48, in a report from the land physician.

The Apportionment of Lepers on Iceland according to Districts.

	1746	1847	1872	1889
East Skaptafell . . .	—	8	19	1
West ,, . . .	—			—
Rangárvalla . . .	—	16		1
(Westmannaeyar) . . .	—			3
Árnæs	—	—		7
Gullbringe . . .	—	22		—
Kjósar	—	—		14
Reikiavik	—	—		—
Borgarfjord . . .	23	—		2
Myra	—	9	13	—
Hnappadal . . .	—			—
Snæfellsnæs . . .	—			9
Dala	—			—
Bardestrand . . .	—	10		—
North Isafjord . . .	—			1
South ,, . . .	—			4
Strande	—			—
Hunavatn	—			—
Skagefjord . . .	1	1	11	1
Öfjord	—	1		—
South Thingö . . .	—	2		1
North ,, . . .	—	—		3
North Mule . . .	—	—		—
South ,, . . .	—	—		—

As leprosy according to the above schema is now apportioned on Iceland, so probably was it also in olden days.

A glance at the map of Iceland shows that out of forty-seven cases, thirty-five (consequently almost three-fourths of all the cases) are met with on the south-western coast of the island, where Snefjellsnæs in the north and the peninsula of Gullbringe with the adjoining Arnæs in the south enclose the Gulf of Faxö, whose coast consists of the two districts, Kjosar and Borgarfjord.

In the frequently mentioned travels of Eggert Olafsen and Bjarne Povelsen, I have found the following statements:

(Page 176. The District of Borgarfjord.)—"Leprosy is not nearly so common here as in the southern districts; nay, it is even rarely met with among persons born at the place. Upon the whole, one does not see so much of it up country as near the shore."

(Page 323. The District of Snefjældsnæs.)—"Leprosy is here more common than at Borgarfjord, and is said to have been formerly still more frequent."

(Page 449. The Districts of Dala, Bardestrand, Isafjord and Strande.)—"One would think that leprosy was mostly found along the Westfjords; nevertheless only very few are seriously affected with this disease. Scorbutus, on the contrary, attacks the feet of all persons more than forty years old. The head, too, is affected with eruptions, and swellings of the gum are common; the teeth rarely become loose, and very seldom real toothache accompanies the disease."

"Loss of sensation is very frequent, and is noticed by those who are operated upon; as they tell you, they only feel very little pain."

"They generally complain of heaviness throughout the body, and quick movements do not at all agree with them."

(Page 695. The Northern Districts of Iceland.)—"Neither leprosy nor scorbutus is nearly so common as on the south and west sides of the island. The hospital for lepers on the Northland is situated at Madrefjell, in the district of Öfjord, and for many years only one, or at most two patients have been found there at a time; sometimes there are none at all."

(Page 820. The Eastern Districts of Iceland.)—"Leprosy is by no means frequent here, as the hospital at Horgsland in 1756 contained only two patients. The disease is, however, more frequently met with in the northern part of the District of Mule. The patients are very seldom sent to the hospital, as it lies so far away, and the road is very impassable."

(Page 961. The Districts of Rangaarvalle, Aarnæs, and Gullbringe.)—"Leprosy is here very frequent, and even persons of quality are not exempted from the disease."

The reason why the south-western part of the country is that most frequently attacked seems to me without doubt to be that it is the district into which the disease was imported,[1] and has been able to take firm root among the poor population, consisting of fisher-folks. This part of the island, the richest and most thickly populated of Iceland, is of course at the same time its weak point—its *locus minoris resistentiæ.*

Against this weak point, all the plagues that at different times have assailed this unfortunate island have directed their chief force. Here is the greatest traffic with foreigners, as well as almost all commercial communication with other countries.

It was on the Westman Isles that barbarous pirates in 1627 ravaged the coast; partly murdered, partly carried off to slavery the poor fishermen from their barren cliffs, and killed their minister, Ion Thorstensen, who so far met with the happier fate, that he after his death was considered a saint.

In the southern part, too, it was that "the great epidemic" in 1493 began, by which most probably is meant the "plague."

The two great measles epidemics, the first in 1644, which was imported by the Örebakke ship (lying at Arnæs), and the second, which commenced the 3rd of April, 1846, and at the same time spread from Havnefjord in the southern, and Skagestrand in the northern part of the island, also chose this way.

The great scarlet fever epidemic of 1797 began on Westman Island; the next, in 1827, in the southern districts.

Whooping-cough attacked the southern part in 1825 and 1839. The dreadful smallpox epidemic of 1707 made its first appearance at Örebakke. As this epidemic, which killed 18,000 out of the population, possesses a special importance for leprosy on Iceland, I shall report what Schleisner[2] says about it.

An Icelander had been abroad, and died during the winter from smallpox. In spring his clothes were brought on shore at Örebakke, and among these a chest filled with linen. His sister put on one of his shirts, and contracted smallpox; in this way the disease spread all over the country. Thirty-four years had elapsed since the previous smallpox epidemic. Several old people who in former days had suffered from the disease caught it again, while most of the young persons, especially men, were attacked. Women were occasionally obliged to carry their dead to the church. The bishop had to saddle his horse himself, and to ride out alone. Twelve thousand persons are said to have died in the diocese of Skalholt, and 6000 in the northern districts, making altogether 18,000, thus leaving only about 34,000 inhabitants. The majority of the lepers died on this occasion, and, besides these, most of the old persons and the pregnant women.

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[1] Most likely the reason why leprosy is so much more frequent in the vicinity of Bergen in Norway.

[2] Loc. cit., p. 61.

Syphilis, which, as well as other venereal diseases, is not endemic in Iceland, has a few times got on shore at Reykiavik; the epidemic which in 1528 was called sárasott is most probably to be explained as syphilis; at all events, the epidemic in 1756, which started in the wool manufactory in Reykiavik, gave rise to that place being called the "Franzos manufactory."

Thus the south-western corner of Iceland has always been the locality which was first and most severely attacked by epidemics.

It has been very difficult for me to get information about the relative proportions between the different forms of leprosy—the smooth and the tuberous—in Iceland. Of course both forms are known there, Limafallssyki being the anæsthetic form, Likprár the tuberous.

Thorstensen[1] describes three forms:

(1) Lepra genuina scorbutica, which seems to be essentially a tuberous form;

(2) Lepra decidua seu rheumatica = Limafallssyki, the anæsthetic form, as is to be perceived from the description;[2] and—

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[1] "Tractatus de Morbis in Islandia frequentissimis, auctore Joh. Thorstensen," 1837. 'Mém. de l'Acad. Royale de Méd.,' Paris, 1840, p. 47.

[2] Incipit talis morbus cum insensibilitate ultimæ extremitatis, sine ullo tumore, sed dolore ardente, supra membrum insensibile, quo loco ulcus aperitur et ultimum os ejusdem membri una cum adjacentibus partibus exsolvitur. Gradus insensibilitatis tantus est, ut si necesse

(3) Lepra arabica seu elephantina, of which Thorstensen only saw two cases in Iceland, and one in Denmark in 1819. Hjaltelin, who gives a good description of what he calls lepra squamosa, says (p. 103) that almost one half of the lepers in Iceland suffer from this form of the disease.

Out of those examined by Schleisner, eleven men and ten women, twelve suffered from the tuberous form, six from the anæsthetic, three from a combination of the two.

Finsen (l. c., p. 54), who saw twenty-two cases on Iceland, never observed a single case belonging to the smooth form (the districts of Ofjord and Thingö). In the official report of 1872, thirty cases of tuberous form and seven of the anæsthetic are recorded, but of these last mentioned not less than six were found in the district of Gullbringe, where the whole number of lepers was twenty-two.

My Personal Researches.

On the 16th of July we arrived at Reykiavik, and already on the 18th of July we began to traverse Faxebugten (the bay of Faxe). The expedition consisted, besides myself, of the assistant physician to the Garnison's hospital in Copenhagen, C. T. Hansen, who particularly took charge of the photographic work; the medical student Gudmundur Gudmundsson, who acted as an interpreter, and the fishing sorter Ámundi Ámundsson as a guide.

The excursions of the first eight days were made on the steamer "Elin," which surely is not adapted to lodge passengers; but, thanks to the owners, our stay there was made as comfortable as possible, the steamer being also given up to our disposal for extra trips.

On the 24th of July the expedition started for the interior of the Southland, whence we returned on August 5th; August 15th we went on the "Thyra" round the whole island.

The plan of our journey was devised by the renowned polar explorator, Captain Hovgaard, and Doctor Björn Olsen,

esset extremitatem adfectam amputare, aut os fere solutum omnino exscindere talem operationen ægroti non, aut vix non percipiunt. Hæc species rarior est quam lepra genuina.

who lent us perfectly invaluable assistance. The Icelandic press had announced our arrival at the different places ; and the governor of the province, Stephensen, who kindly lent us all help possible, had, by a circular to our Icelandic colleagues, recommended them to assist us. I cannot sufficiently extol the amiability and obligingness which our Icelandic colleagues showed ; several of them met us on horseback at the bound of their district, and also accompanied us out of it again.

By working in common we succeeded in finding and examining altogether 102 leprous patients, of whom we wrote minute stories of their illness, and we photographed the most interesting of them. Besides we obtained detailed informations of about forty-two patients whom we could not visit on account of the enormous distances.

District.	Men.			Women.			Altogether.[1]
	Tuberous form.	Mixed form.	Anæsthetic form.	Tuberous form.	Mixed form.	Anæsthetic form.	
Myra . . .	1	1	—	—	—	—	2 (0)
Borgarfjord . .	3	2	2	—	1	1	9 (2)
Gullbringe-Kjosar	2	2	3	2	1	2	12 } (14)
Reykiavik . .	1	1	—	3	—	1	6 }
Arnæs . . .	4	—	2	3	1	1	11 (7)
Rangarvalla . .	4	3	4	5	3	2	21 (4)
V. Skaptafell .	1	—	—	1	1	—	3 (0)
Snæfellsnæs . .	4	—	3	6	—	1	14 (9)
Bardestrand . .	3	2	—	1	1	2	9 (1)
Isafjord . .	2	—	2	—	—	3	7 (4)
Dala . . .	2	—	—	1	—	—	3 (0)
Hunavatn . .	1	—	1	1	—	—	3 (1)
Skagefjord . .	2	—	1	2	1	2	8 (0)
Öfjord . . .	5	6	4	6	2	2	25 (1)
Thingö . . .	3	1	2	1	1	1	9 (3)
Norder Mule .	—	—	—	1	—	—	1 (0)
O. Skaptafell[2] .	1	—	—	—	—	—	1 (1)
	39	18	24	34	11	18	144
	81			63			

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[1] The numbers in parentheses are taken from the official accounts of 1889.

[2] The coasts of Öfjord.

From this follows—

1. That the number of leprous patients on Iceland is at least three times as great as heretofore presumed. That the real number is far, far greater than that which I have found is a matter of course. My journey has been a mere journey of reconnoitring; going about in pursuit of patients was out of the question on account of the enormous distances. I was obliged to confine myself to examine those patients who presented themselves, and in some cases I had to ask my way from farm to farm. That in some places the patients shunned me is a fact; this was, for instance, particularly the case in the province of Bardestrand, where it is considered a disgrace to be leprous, and where the disease is looked upon as infectious. This, again, is the consequence of there being provinces (Dala, Myra, East and West Skaptafell) where I have not set foot, and with regard to which I have been obliged to be content either with the official numbers (Dala, Myra), or I have only counted those patients who did not shun the journey of three to four days to meet me in the neighbouring province (the provinces of Skaptafell). Finally it is due to the circumstance that I scarcely saw any cases of the disease but those *strongly marked,* those of which there could no longer be any doubt. *So in my enumeration nearly all the beginning cases of the disease are wanting.*

2. *That the relation between the tuberous, the anæsthetic, and the mixed form is about the same on Iceland as in other countries.* In the enumerations of the clergymen the anæsthetic forms (Icelandic, Limafallssyki) have hitherto mostly been left unnoticed, as the circular which the head physician has sent round does not require informations, except of the tuberous forms (Icelandic, Holdsveiki).

3. While in certain districts of the country the disease is on the decline, as is especially the case in the whole of the west country, where formerly leprosy was enormously wide-spread, *it is just as sure that in the provinces of Rangarvalla and Öfjord it is on the increase.* I must particularly direct the attention to the last-mentioned "fjord" as the most dangerous seat for the leprosy. The western coast (the province of Öfjord) has in my enumerations twenty-five patients, and the eastern coast of the fjord has nine patients (the pro-

vince of Thingö), which makes altogether thirty-five patients on both sides of the "fjord." These cases are dispersed in small foci in *Olufsfjord, Svarfadardal, Grytubakke,* and round about *Akureyri,* which gives evidence to the local epidemic character of the disease.

Most of the cases I observed about Öfjord were only some years old. As to the point of time at which my now living patients in these two districts have been attacked by the disease, the state of the matter is this :

The province of Rangárvalla.	Province of Öfjord-Thingö.	The patients were attacked
3	0	before the year 1880.
0	1	in „ 1880.
0	0	„ „ 1881.
1	2	„ „ 1882.
1	1	„ „ 1883.
3	3	„ „ 1884.
1	1	„ „ 1885.
0	1	„ „ 1886.
0	0	„ „ 1887.
1	2	„ „ 1888.
2	3	„ „ 1889.
3	3	„ „ 1890.
1	4	„ „ 1891.
0	6	„ „ 1892.
4	6	„ „ 1893.
1	1	„ „ 1894.
21	34	

This survey tells its own story : if one would have a trustworthy picture of the movement of the disease, one must needs have trustworthy lists of mortality ; but as things are, such ones are not to be procured. While in other places, in Isafjord, for instance, our consultations were actually besieged by healthy children (in Isafjord 40—50) of diseased leprous parents, there was in Öfjord at the very utmost a dozen children present—the best evidence that the increase of the disease is not more than one generation old.

East of 30° of longitude I have only met with two patients, one in *Seydisfjord,* the other in *Bjarnarnæs* at *Hornafjord.* Both these patients had immigrated from the Eastland, and they also acquired their illness there. The constantly increasing traffic between the provinces, as well as the great traffic between the Faroe Islands and the eastern coast of Iceland, make these circumstances very critical. Of course one single case is sufficient to rouse a local epidemic.

Since the four miserable hospitals for leprosy on Iceland were abolished, according to the bill of the justice department of August 23rd, 1848, literally nothing has been done against this dreadful disease. The lepers were by this arrangement deprived of their tending and maintenance, and afterwards they have been left to take care of themselves and given up to the care of the pauperism. After a couple of years, the patients who suffer from this generally incurable disease, without any means to earn their own living, fall to the pauperism, and then they are sent to some private farm for a payment which varies from 70 to 150 kroner a year (four to eight £ sterl.). For this sum, which necessarily is quite insufficient, and which is only accepted because the population want ready money, the people concerned keep him only about a year. When it appears that it will not answer keeping him any longer, he is sent to another house, and thus the infection creeps from farm to farm. While nearly all my colleagues on Iceland are zealous contagionists, the opinion of the population differs very much : in those districts where the disease is on the decline it is considered contagious *and* inheritable ; in those districts where it is on the increase the population appears to be thoughtless in the presence of the imminent peril.

So this disease, which one almost considers as prehistoric, can strike root there where Hansen's bacillus refinds its favourite soil of uncleanliness, bad nourishment, and filthiness, under hygienic circumstances which have not altered in many respects since the Middle Ages.

I shall now describe a little further the poor Icelander's mode of living, and the observations I have made as to the evidence of infection. With regard to any more details than I have space to give here I am obliged to direct the reader's attention to the masterly observations of Schleisner.[1]

THE HABITATION.—The Icelandic habitation is in its typical form a sod-hut of green turf. It is built without a foundation, resting upon some large stones or the bare ground. The farm consists of four or five huts, of which each makes one room ; one hut is crammed closely against the other, and all the façades face the road. The front is covered with a thin layer of boards, some few of the rooms are boarded, and from the boards drips the moisture in big drops, even in fine weather, for the sod absorbs the dampness like a sponge. When we had been out in the rain our clothes could never be dried in the interior of these houses. In the façade there are some few windows, which are all, however, nailed up for fear of the winter cold, so that the rooms are only and entirely ventilated through the T-shaped passage which connects each of the rooms with the air outside, but the passage itself is dark and narrow. For the Icelanders are still proved to be on that low hygienic point of civilisation which holds the fresh air to be a more ruinous enemy than the corrupted air. One of the rooms always serves as a separate bedroom for the peasant and his wife ; but *with the poor* this room is dropped, and all the people of the farm—men, women, and children—sleep in the same room, the so-called "Badstofa" (bath-room). In this room every one at the farm lives during the long rainy days and the long winter evenings ; here the meals are eaten, generally in bed, for there are no tables. At the utmost they have a couple of boxes which you can sit on. The Badstofa has six to eight fixed bedsteads, or rather large wooden boxes, each box intended for two or three persons, who usually sleep head against feet and feet against head.

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[1] 'Iceland from a Medical Point of View,' Copenhagen, 1847.

If you enter this Badstofa when thirteen to fourteen persons lie sleeping there, first of all you feel a temperature which certainly both summer and winter reminds you of the tepidarium of a Roman bath, but surely here the likeness ceases. A suffocating stink and an unwholesome smell meets you. It is the smell of the mouldy hay, of the sheepskin quilts that are never dried or aired ; it is the smell of the dirt which is dragged into the house on the clumsy Icelandic skin shoes that want double soles, and are quite unqualified to keep out the dampness. In this dirt a confused mixture of cats, dogs, and children lie reeking on the floor, exchanging caresses and echinococci; it is the smell of the wet stockings and the woollen shirts which hang to dry next to a slice of dried halibut ("Rekling") or the dried cod's head—this dreadful irrational favourite dish, for which the Icelander pays four kroner (4*s.* 6*d.*) a hundred. And if you poke your nose into the corners of the Badstofa, you will find a bucket in which the urine of the whole party is gathered; it is considered good for wool-washing.

I shall never succeed in picturing all the details of such an interior, which, in addition, you may imagine as being heated in the winter, at the places where they have no turfs, with the sheep's dried excrements, a kind of fuel which spreads a penetrating smell of nitre and burnt wool.

One must have seen and smelt it all to be able to understand that the leprous disease is due neither to the rancid butter nor to the dry fish. Just as well as rousing accusations against these articles of food which certain leprologists do, one might complain of the want of brooms to sweep the floor with, or insist that the leprosy is owing to the want of window-hooks, or to the stagnant water they drink. It is neither one nor the other of these moments, but the whole *ensemble*; it is the absolute want of cleanliness plus Armauer Hansen's bacillus, which in such an interior finds its true paradise.

THE NOURISHMENT.—The adherents of the theory of the rancid butter and the rancid oil as the causes of the leprosy must not imagine that a house where they prefer or are content with the rancid butter is more careful with the other articles of food. The rancid butter or oil is only a symptom of the general filthiness which manures the soil in which the disease thrives. And then the poor fishes: the adherents of the theory of the fat fish will, no doubt, be content to hear that on Iceland it is especially the inhabitants of the coast who are affected with leprosy. But the explanation of this is quite simple, the interior of the island being almost uninhabited and uninhabitable, and covered with glaciers. Also on Iceland they know the tradition about the leprous disease being due to far too exclusive an eating of fat fish. In Gullbringe it was the halibut, round the Lake of Thing valla it was the trout which was accused of causing this horrible disease. It is a well-known fact that too monotonous a diet breaks down the resisting power of the organism as to diseases of every kind, but it can never create a specific and infectious disease. We also notice that the leprous disease has decreased considerably in the province of Gullbringe, and it has almost disappeared round the Lake of Thingvalla (I only found one single patient in this district). But it still teems with halibut and trout. All these theories may soon befittingly be buried beside that of Hjaltelin, who believed that the decrease of the leprous disease in Iceland was owing to the introduction of the potato. He considered the leprous disease as being founded upon the want of potassic salts in the blood. At the present time the potato has found its way to most of the Icelanders' tables, but unfortunately the leprous disease is on the increase. Is now this, may be, the potato's fault?

The essential nourishment of the Icelanders consists of *dried fish,* which is eaten cold with *rancid butter;* they even prefer the rancid butter that is kept for years, and to which the poor add a little (train) oil of whales or seals. The *sour milk* which they call "Skyr" forms a conspicuous part of their food, and can likewise be kept for years. *Bread is a rare* food, and does not form a prominent part, as Iceland does not produce any corn itself. The bread is prepared without any yeast or leaven, generally under the form of pancakes. That meat which bears the prominent part is the *mutton,* which is eaten new-killed in the months of September and October; smoked, salted, or preserved during the other months of the years. The Icelandic mode of cooking *is almost destitute of salts, spices, and vegetables.* As the chief grievance of their living the scarcity of *carbonic hydrates* must undoubtedly be stated. *But the want of carbonic hydrates only* does certainly not cause leprosy.

THE LEPROUS DISEASE IS AN INFECTIOUS DISEASE.

Is it really necessary in our day to heap proof upon proof of this simple fact before it prevails? Why, we have seen the heroic Pater Damien die at the hospital for lepers on Molokai. We know the grafting which Dr.

Arning from Hamburg[1] undertook on a criminal sentenced to death from the Sandwich Islands; his name was Keanu. This criminal became two years after attacked by leprosy, which started at the point of inoculation. Certainly Dr. Swift insists that this last proof is not perfectly valid, as the son, the nephew, and the cousin of the experimental object were all leprous. The late Dr. Danielssen made in 1844, 1846, 1856, and 1858 repeated inoculations[2] on himself and upon several of the hospital nurses, inoculations which all remained resultless. Profeta has made similar experiments, and always with negative results. However, all these negative results do not, of course, prove so much as one positive result. How often does it not happen that the plain vaccination fails for us? Let us, opposite to these negative results, place Gairdner's two children,[3] who became leprous by the vaccination. Onetti has also observed a case of leprosy transmitted by the vaccination.[4] Ortmann and Melcher[5] have perhaps inoculated leprosy in rabbits.

And there are not a few clinical proofs of infection. Johannes Petersen, an Icelandic physician from the eighteenth century, quotes as an instance a peasant who became leprous by wearing another patient's boots. At the present times, Hawtrey Benson[6] (from Dublin) has in 1872 presented a man who had never left Ireland, but who, after having used his brother's clothes, became leprous, and died from his illness. He had contracted the leprosy in the East Indies, and brought it home to his native country. Small epidemics have been noticed in Cape Breton[7] and in Louisiana,[8] which with greater precision point at contagion. And Halm[9] cites a case where a nun-nurse became leprous by pricking her finger when she was patching the clothes of a leprous patient. Our Norwegian colleagues, who have always distinguished themselves in the first rank among those who have studied this dreadful scourge of their country, Drs. Armauer Hansen and Kaurin, as well as Leloir, who visited the leper asylums in Norway, quote numerous instances,[1] which leave no room for doubt as to the possibility of contagiousness. I have lately received a small very instructive essay by Lorand (Carlsbad),[2] in which are collected some hitherto unpublished observations of our Swedish colleagues, Langgren, Stappelmohr, Oehrn, and Sederholm. These physicians, who live in close relations with lepers, are outspoken adherents of the theory of contagiousness, quite as are our Icelandic colleagues.

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[1] 'Archives of Dermat. and Syphilis,' 21 Ergänzungshefte, No. 9.

[2] 'A Commemorative Writing at the Fifty Years' Jubilee of Danielssen,' Bergen, 1891, p. 15.

[3] 'British Medical Journal,' June 11th, 1887.

[4] 'Gazzetta medica di Milano,' 1846 (cited from Leloir).

[5] 'Berl. klin. Wochenschr.,' 1885, No. 13.

[6] 'Dublin Journal of Medical Science,' June, 1877.

[7] 'Canadian Journal of Medical Sciences,' September, 1881 (cit. from Leloir).

[8] 'Annales de Dermat.,' November 25th, 1885.

[9] 'Thèse de Nancy,' 1882 (cit. from Besnier).

My personal researches have given the following result.

I have classified the 102 patients whom I have examined myself into two groups :

1. Patients in whose family cases of leprosy *have occurred* (fifty-one patients).
2. Patients in whose family cases of leprosy *have never occurred* (fifty-one patients).

To be able to understand the significance of these informations, one must know that most of the Icelanders possess exact genealogical tables of lineage, which even permit some of them to trace their descent back to 874, to the first colonists.

I should feel inclined to believe that nowhere else an examiner could produce any so reliable and complete material for ætiological and epidemiological examinations as in Iceland. Besides, I must add that the majority of my patients have proved to be very stationary with regard to their residence. There are, may be, a dozen persons who have left, for a shorter or longer time, the district where they were born ; but the greater part of the Icelanders are born, live, and die in the same parish, a circumstance which is peculiarly favourable for epidemiological researches, so that the ætiology of leprosy would be quite clear were it not for this confounded period of incubation, the duration of which is utterly unknown, which we have to combat with. And, lastly, I must add that as a rule my patients have enjoyed perfectly good health before the leprous disease broke out with them.

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[1] 'Norsk Magasin for Lægevidenskaben,' different years ; and Leloir, 'Traité de la Lèpre,' Paris, 1886.

[2] 'Wiener med. Wochenschr.,' 1894, Nos. 26 to 28.

First Group.

Cases of leprosy in the family (fifty-one patients).

A. *Father and mother both leprous.*

This group comprises three patients. With all the three persons concerned the leprous disease did not break out until a very long time *after* the children's birth; and the chances are here that these cases are those of contagion rather than of heredity, all the patients having brothers and sisters who have remained perfectly sound.

No. 56. A boy of eleven with lepra maculosa—was not known to be affected. Is a son of my patients Nos. 54 and 55. No. 54, the mother, has lepra anæsthetica, probably five or six years old.

No. 55, the father, has been tuberous for eight years. During the first two years of his life the boy shared the bed of his parents, but not afterwards. He has a half-sister and a half-brother, who are both sound.

No. 64. A member of the family at Sydrigrof, which place he left only three years ago (this family will be mentioned later on). He is a man of twenty-eight, with lepra mixta six years old. The father died eight years ago from leprosy after eight years of illness. The mother is my patient No. 26, who suffers from anæsthetic leprosy; she has been ill for nine years. The other brothers and sisters will be mentioned under No. 26.

No. 25. A sister of the above-mentioned; she has lepra mixta eleven years old.

B 1. *The father only leprous* (*fourteen patients*).

Also here the question is about cases where the parents became leprous *after* the children's birth.

No. 2. Man of thirty-one, lepra tuberosa two and a half years old. The patient's father, fifty-five years of age

(No. 10), has during six years been suffering from tuberous leprosy.

No. 3. Man of forty-three, lepra tuberosa eight years old. The patient's father died fifteen years ago from lepra tuberosa. During five (5) generations a man of his family has been leprous.

No. 17. Man of thirty, with lepra mixta five years old. The father died fifteen years ago from L. tuberosa.

No. 18. Woman of forty-two, with L. anæsthetica three years old. The father died sixteen to seventeen years ago, after five or six years of illness from L. tuberosa. A sister died from L. tuberosa in 1892.

No. 28. Man of eighteen, L. tuberosa ten years old. The father died twelve years ago after two years of illness from L. tuberosa. *He is thought to have infected the son, who was then four years old.*

No. 31. Woman of fifteen, L. mixta four years old. A sister of above-mentioned No. 28, *by whom she has probably been infected.* Four other sisters and brothers are alive and in good health.

No. 35. Man of twenty-one, L. tuberosa one and a half years old. The father died eleven years ago from L. tuberosa after two years of illness.

No. 42. Man of forty-one, L. anæsthetica seven weeks old. The father died forty years ago from L. anæsthetica.

No. 48. Man of sixty-four, L. anæsthetica six years old. The father died sixty years ago from L. anæsthetica.

The Family Einarsson.

No. 59. Woman of forty, L. anæsthetica seven years old.

No. 60. Woman of twenty-six, L. tuberosa seven years old.

No. 61. Woman of thirty-six, L. anæsthetica ten years old.

No. 62. Man of twenty-nine, L. anæsthetica mixta nine years old.

These four are sisters and brother, besides one sister of thirty-five, not examined; she has been suffering from tuberous leprosy for twelve years. These five children's father, Einar J—, died nine to ten years ago, sixty years old, of L. tuberosa. His sister's daughter was leprous. Besides the above-mentioned five, there are, out of eleven sisters and brothers, yet two other healthy sisters alive, who left their home quite early, before the outbreak of the father's illness, one in her second year of life (she has never since visited her parents), the other in her sixth year of life. *The five above-mentioned sisters and brothers, who did not break off the connection, have all become lepers.*

No. 96. The patient has most probably been infected in marriage. Man of fifty-eight, L. anæsthetica twelve years old. The patient's father was leprous, but died two years after the son's birth. The patient's wife died fourteen years ago from L. tuberosa, after thirteen years of marriage, eight to nine years of illness. *Two years after her death the disease broke out with the patient.*

B 2. *Only the mother leprous* (4 *patients*).

Also here the mothers have become leprous *after* the birth of the children.

No. 24. Man of thirty-two, L. tuberosa eight to nine years old. The mother died nine years ago after two years of L. tuberosa. Out of thirteen children five have died as babies, eight are alive, and patient only ill.

No. 44. Man of thirty-seven, L. tuberosa four years old. The mother, who is seventy-one years old, lives and has kept her bed during nine years, suffering from L. tuberosa. A sister of No. 44 died five years ago after two years of L. tuberosa.

No. 75. Man of twenty-five, L. mixta three years old. The mother died twenty-one years ago of L. tuberosa. One brother died at the age of twenty-eight, seven years ago, after having suffered for four years from L. tuberosa.

No. 76. Boy of nine, L. maculosa; outset uncertain. The son of No. 77, who has L. tuberosa. The father has only an ordinary psoriasis. There have been six brothers and sisters, two of whom have died from children's diseases, four are alive, the youngest is eleven weeks old and is nursed by his mother, No. 77, who *suffers from a strong tuberculo-ulcerative leprosy.* The two midmost children do not ail anything.

I particularly call the attention to this case, because it so strikingly shows that leprous women *may give birth to healthy children even at the terminal stage of their illness,* a fact which does not exactly speak in favour of the theory of heredity, though, on the other hand, it does not absolutely contradict it. But this observation cries loudly about the filthiness which thrives in leprous houses.

C. *Father and mother not leprous, but leprous brothers and sisters; nineteen patients.*

In most of these cases such patients are concerned who have been infected by their brothers and sisters. It is a matter of course that the danger of infection is nowhere so great as in the intimacy of home life, and naturally the younger children will have to suffer. Of two of my patients it is known for certain that for a long time they have shared the bed of lepers; a third patient has lived for several years under one roof with a leper.

No. 7. Woman of 46, L. tuberosa. The patient's eldest brother died in 1887 from L. tuberosa, which had lasted for eight years (1879—1887). They were together until her thirteenth year (he was then twenty-one), but he was not attacked before he was almost forty.

No. 27. Man of 52, L. anæsthetica twenty-two years old. A half-brother died ten years ago, fifty years old, from L. anæsthetica. The patient has during *about three months slept with a patient suffering from L. tuberosa, three to four years before the outbreak of his own disease.*

No. 34. Woman of 59, L. mixta two years old. Two sisters both died from leprosy: one, whose age she does not remember, died ten or twelve years ago; the other, forty years old, two or three years ago. If she has been *infected by them*, she can only think it being *because* she kissed *them when she met with them.*

No. 38. Woman of 26, L. tuberosa three years old. A sister of No. 34 lived until the age of twenty in Holtamannarhepp, the district in Rangarvalla where leprosy has spread very much during the last ten years. The farm where she lived *was frequently visited by lepers.*

No. 39. Woman of 60, L. tuberosa twelve to thirteen years old. A sister of 50 died three to four years ago after two to three years of illness, several days' journey from the patient's residence.

No. 40. Man of 35, L. tuberosa (look under No. 41).

No. 43. Woman of 22, L. anæsthetica since October, 1893.

A half-brother died in the summer, 1883, thirty-nine years old, after ten years of L. tuberosa. He stayed till his death at the same farm as the patient.

No. 45. Woman of 63, L. anæsthetica, began thirty-three years ago. The disease broke out with her before either of her two brothers who died from L. tuberosa. A brother of 42 died, twenty years' illness. Four brothers and sisters out of sixteen live beside the patient, and they are all well.

No. 55. Man of 37, L. tuberosa, eight years old; his grandmother's sister and her daughter have had leprosy. A sister died in the year 1894 from leprosy after three to four years' illness; she lived in the same parish. The patient himself slept one winter, twenty years ago, together with a leprous patient.

No. 58. Man of 45, L. mixta, five years old. The patient's father died from leprosy. A brother, older by one year, died twelve years ago from the measles with L. tuberosa; he had been ill for four years: he lived in the same parish. A half-brother died seventeen years ago in the same parish, after eight years of L. tuberosa.

No. 68. Woman of 53, L. tuberosa mixta, thirty-five years old. A sister died thirty-five years ago in her nineteenth year from L. tuberosa, another one forty years ago in her thirtieth year from the same disease. The patient herself *was together with these sisters at their parents' till her twenty-sixth year*.

No. 73. Woman of 64, L. tuberosa mixta, two years old. Her father's sister and this latter's two children were leprous. The patient's sister of sixty-nine is suffering from six years' advanced L. tuberosa at the terminal stadium; the patient has constantly kept company with this sister, who lives in a neighbouring farm. The patient has two daughters, one married and well, the other married to No. 74 (L. anæsthetica).

No. 78. Man of 53, L. tuberosa, five years old. A half-sister, who lived close by, died seven and a half years ago from L. tuberosa, after seven to eight years' illness.

No. 82. Man of 40, L. tuberosa, one year old. A sister of thirty to forty died five years ago from leprosy; they kept company, but not intimately. *Four years ago the patient lodged a leprous pauper for a year in his farm* (*for* 60 *kroner —*£3 1*s*. 3*d*., *the lowest price I ever heard of in Iceland*).

No. 86. Woman of 31, L. tuberosa, two years old. A sister of No. 88.

No. 88. Man of 30, L. tuberosa, one year old. Brother of No. 86; has lived in the same farm as she, who became ill a year before.

No. 90. Woman of 38, L. mixta, ten years old. A half-brother died half a year ago after six years' illness about forty years of age. They were together one winter, but the patient No. 90 was then already attacked. A half-sister suffers from L. anæsthetica (No. 92), but she too was attacked before.

No. 92. Woman of 53, L. anæsthetica, ten years old. A half-sister of the above-mentioned No. 90; she has lived at a farm together with a widow who died at the farm from L. tuberosa.

D. *The parents not leprous, but a remoter relation; eleven patients.*

No. 1. Man of 33, L. tuberosa since May, 1894. The patient's father's father became leprous at a more advanced age.

No. 13. Man of 46, L. anæsthetica twenty-three years old. At least three generations backward there has been a great deal of lepers, but neither parents nor grandparents were leprous.

No. 15. Woman of 30, L. mixta fifteen years old. Her mother's brother died five years before the patient's birth from L. tuberosa; two daughter's sons of another of her mother's brothers have died from leprosy.

No. 23. Woman of 34, L. tuberosa three years old. Her father's brother was leprous; he is now dead, and did not live at the same farm. At the neighbouring farm lived a leprous patient with whom she denies to have had any intercourse. Dr. G. Gudmundsson, on the other hand, says *that she has had a leprous man-servant at her farm for about a year.* The lepers conceal such points, lest they shall rouse the inhabitants' apprehension of having any communion with them. This woman came to me on horseback accompanied by a dead-drunk attendant. Need I to add that they both employed the same pocket flask with brandy, regardless of the large ulcerated lepromata in the woman's throat, on her lips, and on her tongue.

No. 30. Man of 37, L. tuberosa mixta five years old. His mother's brother died from leprosy.

No. 47. Woman of 67, L. anæsthetica forty-five years old. She has two leprous nephews, one of whom is dead, the other (No. 40) is alive.

No. 72. Woman of 30, L. tuberosa. Her father's mother died from leprosy. Her own disease began last year hardly *one year ago, and for more than one year she has served at a farm where a tuberous leprous patient*, a sister of No. 73, and mother-in-law of No. 74, *lives.* The patient lies in the same "Badstofa" (room), next to the leprous patient. We are informed that until four years ago *one of the children at the farm shared the bed of the leper for one year and a half.*

No. 74. Man of 40, L. anæsthetica. His mother's brother has been leprous, but he has never known him. His mother-in-law is leprous (No. 73), and the sister of his mother-in-law, being also leprous, *was frequently together with him, and became ill before him, but they did not live at the same farm.*

No. 83. Man of 32, L. anæsthetica mixta three and a half years old. His father's brother died from leprosy before the patient was born.

No. 84. Woman of 37, L. tuberosa two years old. Her father's brother, who died nine years ago, was leprous, but she did not live together with him. Her late husband's brother's son suffers from L. tuberosa.

No. 87. Woman of 34, L. tuberosa three years old. Her father's brother died from leprosy many years ago. A brother of 20 died two years ago from leprosy after six years of illness. He rambled about to different places in the district; the last year of his life he lived at the patient's farm.

SECOND GROUP.

No cases of leprosy in the family; fifty-one patients.

Again I call attention to the fact that these negative informations are most likely as reliable as is altogether possible to procure them. Most of the Icelanders keep, as before mentioned, genealogical records. What are they to do during the long winter evenings? Again and again it happened at the consultations that the genealogical tables were fetched out of the pocket, and that the patients referred to them and gave us information from them. There is, therefore, hardly any other examiner who has disposed of a material as trustworthy as mine, which appears from such details as those I have already stated, where, for instance, a patient is able to tell us that in five generations of his family one man has been leprous.

A. *No leprosy in the family, neither can any contagion be stated; thirty-three patients.*

For regularity's sake I cite their running numbers, but considering the space I give no further information. The minute histories of the diseases shall be published later with the same running numbers.

Running numbers: 4, 5, 8, 9, 10, 11, 14, 16, 19, 20, 29, 46, 50, 51, 53, 57, 63, 65, 66, 69, 70, 77, 79, 81, 85, 89, 93, 94, 95, 97, 100, 101, 102.

B. *No leprosy in the family, the patient probably infected by marriage; two patients.*

(Besides there is one case without a number, which belongs to this: it is due to oral communication, and further the stories No. 41 and 52, in which the patients have been infected in concubinage without marriage, and No. 96 who is included in the first group.)

The Family at Sydrigrof.

No. 26. Widow of 54; the mother of this family, L. anæsthetica nine years old. The patient herself was perfectly well until in 1885 she was affected by the disease. She was married in 1859–60: 1878, after eighteen years of married life, her husband became leprous and died in 1886, fifty-seven years old. The husband's grandfather, whom he had never seen or known, was leprous; on the other hand, his father was not; but his blind brother, who died in 1870, was leprous, and accompanied his brother (the husband of No. 26) all over. The parents of No. 26 were healthy; they had only two children; the other sister is alive and sound. The patient has had eleven children, out of whom three, the midmost of the lot, died as babies. The youngest child was born in 1879, the year after the outbreak of the father's leprosy; he was examined by me; he was now fifteen years old. He suffered from fainting fits, anæmia, his eyebrows had fallen off, but there was no anæsthesia nor other signs of leprosy. Two other sons and two daughters were examined by me, among those the youngest but one, a son of nineteen; they did not ail anything. Two other sons were absent; afterwards I met No. 64, who three years ago left his parents' house, and who now suffered from L. mixta six years old. A daughter of thirty-one (No. 25), who lived at another farm as a pauper, suffered from L. mixta eleven years old.

No. 54. Fifty-three years old, suffers from L. anæsthetica and is married to peasant No. 55, who suffers from L. tuberosa. She does not know that she is ill, still she remembers that five to six years ago she suffered from giddiness and shivering fits. The gout, which had plagued her head, wrist, and arms during twenty to thirty years, grew worse. Scarcely one year ago she had an itching eruption *on her arms after having washed her husband's clothes;* when she scratched it she observed on her left arm, *just above the wrist on the ulnar side, an anæsthetic* patch of the size of a child's palm. In this patch there is analgesia up to 250 (Friedenreich's anæsthesiometer), but no anæsthesia. The skin is, in one half of the speck, rugged, erythematous. The hair is falling off, and there is a beginning contraction of both the small fingers (without inspissations of fascia palmaris), but otherwise no signs of leprosy. No sensible inspissation of the ulnar nerve on the left arm.

Without a number.—Woman married to my patient No. 95, who is a man of 46 with L. mixta. During five years the woman has been suffering from neuralgia in the whole of her body, and she has anæsthetic specks on her thighs (not examined).

C. *No leprosy in the family, probably infection; sixteen patients* (plus *one patient without a number*).

No. 6. Man of 36, L. tuberosa five years old. He has had leprous associates.

No. 12. Man of 51, L. anæsthetica ten years old. Has during his youth kept company with many leprous people.

No. 21. Woman of 31, L. tuberosa five years old. She has for one year served at *a farm where a leper lived in the terminal stage of the disease; he died the following year.*

No. 22. Woman of 24, L. tuberosa four years old. *In* 1884 *a leprous fisherman stayed at the farm where she was* in the fishing season. Besides, a leprous patient whom she served frequently came there.

No. 29. Man of 63, L. tuberosa ten years old. *Lepers have often stayed the night over at this farm;* he is the richest farmer of the parish, and consequently is very much visited by people.

No. 32. Man of fifty, L. tuberosa ten to twelve years old. *Lived for a couple of years together with a leprous patient at the same farm.*

No. 33. Woman of 31, L. tuberosa six years old. For about one year *she shared the bed of a leprous patient, and during this time she went through a cure for the itch.*

No. 36. Man of 56, L. tuberosa mixta four years old. When fifteen years old he served together with a leprous boy.

No. 41. Woman of 34, L. tuberosa half a year old. *Lives together with patient No.* 40, *and belongs to:*

The Family at Moshvol in Rangarvalla.

The family at Moshvol consisted of three brothers, one of whom (he seems to have dragged the infection into the family) died last winter of L. mutilans. He was fifty years old, and had been ill for ten years. This brother travelled about twenty-five years ago together with a leprous patient, slept in the same bed as he, and is supposed to have been infected by him. The other brother (No. 40) is suffering from fresh L. tuberosa. The third brother, with whom No. 41 lives together, is not yet affected, though. The brothers' mother's sister (No. 47) is sixty-seven years of age; she lives at a more distant farm and suffers from L. anæsthetica, which has lasted for forty-five years. For the rest there is no leprosy in the family. The father of these three brothers died in the winter 1893–4 at the age of eighty! The mother is alive and sound, eighty-five years old.

The day after the death of the above-mentioned brother, Dr. Olafr Gudmundsson was sent for to No. 41 to deliver her (she suffered from narrowness of the pelvis) of the third illegitimate child with the brother who is not leprous. The woman in labour lay *in the same bed with the same bedclothes which the leprous corpse had left the day before,* and there she was getting ready for the delivery in these very little comfortable surroundings, which was fortunately prevented by the physician. *The same winter the woman in labour was attacked by tuberous leprosy.* At my arrival she had no suspicion of this, for she had regarded the prodromes as "pains of gout," and the first protuberances (tubercles) as "warts."

No. 49. Man of 35, with L. tuberosa two years old. He served fifteen years ago together with a leprous patient.

No. 52. Widow of 51, L. tuberosa three years old. A leprous man died two years ago after two years of illness at the same farm as the patient (*most likely he lived in cohabitation with the patient*), and he is by *the patient considered to have infected her.* She herself is a midwife, and until May, 1894, she still practised as one. She suffers from far advanced leprosy with large scattered tubercles, covering also her hands and forearms.

No. 67. Man of 67, L. anæsthetica eleven years old. Once he *lodged a pauper for three years; the latter was suffering from L. tuberosa.* He left him fourteen years ago. *Three years after he was himself attacked by the disease.*

No. 71. Man of 50, L. anæsthetica five years old. Twenty years ago he served at a farm where a leprous patient came on a visit. This patient was rambling about, and died at this farm in a bed opposite the patient.

No. 80. Man of 35, L. anæsthetica three years old. *For two years he has been living under one roof with his sister-in-law,* No. 70, who was not known to be leprous, but now she has been ill for three years.

No. 98. A fisher of 35, L. mixta two years old. Five years ago he shared the *room of a leprous patient and ate together with him for six weeks.*

No. 99. Boy of 14, L. maculosa two years old. A sister's son of his father was leprous. *When the boy was ten years old he slept for half a year with a woman* (No. 86) *of whom it was not known that she was ill, but two years after tuberous leprosy broke out with her.*

Finally I add an oral communication from Dr. Thoroddsen in Gullbringe about a patient whom I did not see.

Without a number.—"A girl of 18, L. anæsthetica begun this year. Her father's sister, who is now dead, had lepra nodosa, and stayed four years ago with the patient's father. *The child of fourteen shared the bed of the leper during the whole winter.* Three years after *she became ill herself.* Her father's sister has since the outbreak of her illness borne a child, who is now six years old ; I have examined it, and it does not ail anything."

Answer to the Prize Question.

Conditions under which leprosy has declined.—From the historical view I have given in the first part of my work it appears that *the leprous disease* in all probability *has been introduced into Iceland after the Crusades, probably from Norway.*

1. *Four hospitals.*—It spread very much on the island, and increased most likely very strongly during the sixteenth century. In 1651 *four hospitals* were erected as a defence against the disease ; they never got to contain many of the leprous patients, hardly more than 5 per cent. of the whole number. Their power of combating with the progress of the disease was not great ; they were dirty, small, and unclean. Nevertheless I suppose they were of some use by isolating the worst patients and those who were most dangerous of infection, whom no one else had a mind to house. Undoubtedly it has had a far better and more preventive influence that the population itself *dreaded the infection.*

2. *Popular dread of contagion.*—The leprous disease

was in the Middle Ages all Europe over held to be an eminently contagious disease. For a long time the Icelanders stuck to this view, and not before the nineteenth century did this opinion waver, and they begin to listen to the statements as to its being an inheritable disease.

3. *The great devastating epidemics.*—Better than all public measures against the disease, though, was the effect of *the great devastating epidemics,* especially the smallpox epidemic in 1707, which swept away one third of the population of the whole island, and the epidemic of the measles in 1846. It is particularly mentioned in the history of Iceland that in the first instance *the lepers had always to suffer from these epidemics.* Yet after each epidemic the number increased again, sheltered by the bad hygienic circumstances.

4. *Forbiddance of marriage.*—In 1776 the lepers were *forbidden to enter into marriage.* Naturally this inhibition has also been conducive to diminish the disease, the leprous patient being as a rule most dangerous for his own family.

But, on the other hand, the inhibition was not strictly carried into effect, repeatedly it had to be enforced anew, and besides, the beginning lepers probably hurried on to marry before their illness had become manifest to their surroundings.

5. *Advancing civilisation.*—Thanks to these different circumstances, the disease decreased by-and-by in Iceland, to which fact, of course, *the advancing civilisation* assisted somewhat, although its hygienic progress on Iceland has been exceedingly small with regard to the poor. Therefore in 1848 the Government closed the four miserable leproseries.

No doubt this arrangement has been to the injury of the country. Surely the hospitals played but a slight part in the combat against the disease, but it must not be left out of consideration that their existence indicated that the disease was still to be feared. On the contrary, the abolishing of the hospitals and the administration's throwing up the game could not help giving the population the idea, which Iceland's superior physicians persistently maintained, that the disease was on the point of becoming extinct spontaneously, and that it did no longer deserve any interest.

Thanks to the improved means of communication (steamship traffic) the leprous patients have been able to make their way to parts of the country which formerly the disease had not taken hold of, and where, therefore, the population at the present day did not entertain any fear of it. Thus in two districts the disease has spread. Still, it is not to be settled definitely how much it has increased, for the Icelandic Government have not had their eyes sufficiently open for the imminent peril; they have been content with quite superficial enumerations performed by the clergymen, and which therefore almost solely concerned the tuberous lepers. Thus the official enumeration of 1889 reports but 47 patients, while without any special searching I found 144.

Post-scriptum.—Dr. Ehlers' second voyage in Iceland during the summer 1895, has brought to light 15 new patients, so that their total number is now 159. It cannot be an exaggeration to say that there are at present at least 200 lepers in Iceland.

LEPROSY IN SOUTH AFRICA:

A REPORT ON THE FACTS AS TO THE RECENT INCREASE OF LEPROSY AT THE CAPE, AND ITS PREVALENCE IN SOUTH AFRICA.

BY

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LEPROSY IN SOUTH AFRICA.

The archives of the Cape Colony do not contain much information about leprosy, and until the middle of the last century no mention is made of this loathsome disease, so that it is reasonable to conclude that until that time the disease was not prevalent in the European settlement.

The coloured races then inhabiting the colony were, however, afflicted with the disease, and native tradition clearly proves that leprosy was known amongst the aborigines long before they had any intercourse with the strangers.

At the time of the European occupation of the Cape there were living in the colony two distinct races,—the Bantu, or black men, and the Hottentot and Bushmen tribes, who were more or less off-coloured. The former, roughly speaking, lived east and north of a line drawn from Walfish Bay on the west coast to Port Elizabeth on the east coast; the Hottentots and Bushmen occupied the country to the west and south of this line.

It is not definitely stated that leprosy existed among the Bushmen, but it certainly did to a great extent amongst the Hottentots, and to a less extent among the Bantu races.

In the north, among the natives of the interior, and in fact among all the native tribes of the colony, it existed before the advent of the white man, so that it is reasonable to conclude that it was not introduced into the colony by the new-comers, but that it had been spread by direct communication from the north, or by visitors to the country in the distant past.

During the reign of the East India Company, however, there was free intercourse between the Cape Colony and the East and West Indies, where the disease was rife, so that probably the number of cases in South Africa was augmented by importations from these colonies.

It is not, however, until the middle of the last century that leprosy was specially mentioned by the Dutch writers and authorities.

On the 10th of May, 1756, the Landrost and Heemraden of Stellenbosch, a village situated about eighteen miles due east from Cape Town, which was founded in 1680 by Governor Van der Stell, sent in a report to the then Governor of the Colony, Ryk Tulbagh, and the Political Council, asking that steps should be taken to deal with the lepers in that district.

Two medical men were appointed to examine the cases and report upon their condition, which they did on the 20th of July, 1756, in the following terms:

"1. In the family of the farmer John M—, of French Hoek, we found the said J. M— affected in the worst form. He is stated to have had the disease for eighteen years. His family consists of his wife, four daughters, and two sons, all apparently healthy with the exception of the eldest daughter, who had taken the greatest share in nursing her father, and shows at present indubitable symptoms of the disease.

"2. In the family of the farmer James M—, of Wagonmakers, Vlei, J. M—, who has had the disease for nine years, is so bad that the extremities of his fingers and toes are mortified. His wife, four sons, and three daughters do not show any symptoms of leprosy. But, as it has appeared to us that the two J. M—'s after having become diseased became the fathers of many children by their wives, we would respectfully suggest that a careful eye should from time to time be kept on those children, so that if any signs of the disease should show on them, steps might be taken in time."

On August the 24th, 1756, the Landrost and Heemraden again wrote to the Governor, saying that the persons suffering from leprosy should be entirely separated from the healthy people. Their report ran as follows:

"We have the honour most obediently to report, that in our opinion the surest method would be to entirely separate from intercourse with healthy people the persons proved to be leprous; but as there is some difficulty in this course with regard to the hitherto healthy members of their families, we would suggest for the present to recommend the families affected with leprosy to know their own duty in this matter, and to refrain from such intercourse by which others might become infected. Further, by affixing notices to inform all the inhabitants in what family the disease has to a certainty hitherto been discovered; also that as from time to time it has been observed that many of the inhabitants do not think much of the disease, and have even less notion of its dangerous and contagious character, to warn them that every one should most carefully beware of those families, so as to avoid exposing themselves to the dreadful results which it would be afterwards useless to reject."

The Governor approved of these suggestions, but stated that as the two families by the adoption of these measures would be plunged into extreme poverty, the Landrost and Heemraden should provide for their maintenance.

This is the history of the first two lepers mentioned in Cape history. The history is interesting for two reasons: (1) because the fuss made over the cases shows clearly that at that time leprosy was not a common disease in the colony; probably the two cases mentioned were the only lepers in the colony at that time. (2) Because even at that early date the contagious nature of the disease was recognised. The patients and their families were practically ostracised, as the regulations under which they lived prohibited all intercourse with the healthy outside world.

These extreme measures seemed to have the desired effect, for nothing more is heard of the families.

No mention is again made of leprosy until the beginning of the present century, so that it is reasonable to conclude that during the next fifty years the disease, though probably still existing, did not make much progress.

In 1817, on the 11th of February, Lord Charles Somerset, then Governor of the colony, issued a proclamation, directing that all the lepers in the Cape Colony should be sent to Hemel-en-Aarde, in the Caledon District, a place which had been granted to the Government for this purpose by the Landrost and Heemraden of Swellendam.

Leprosy had by this time considerably increased in the colony, especially amongst the Hottentots. The Moravian missionaries had for five years previously been collecting these outcasts among men at this spot by offering them a home, and by ministering to their wants.

This Hemel-en-Aarde is situated among the Caledon Mountains, a few miles away from the village of Caledon. It is a most isolated spot—a small valley buried among the high hills and almost impassable rocks, over which only a glimpse of the sky can be seen. The valley is well sheltered from the winds, the soil is fertile, water plentiful, and the climate warm and equable, so that the patients and their friends, under the supervision of the missionaries, soon turned the barren waste into a veritable heaven on earth, as the name implies.

Into this lonely spot patients were drafted from all parts of the Cape Colony. At Graaff Rienet and at Port Elizabeth temporary lazarettos were erected for the reception of these unfortunate cases prior to their transmission to Hemel-en-Aarde. This was absolutely necessary, as travelling in those days was slow, and the distance being great, a journey was not undertaken unless the number of passengers justified it. When a sufficient number of lepers had been collected at these stations to form a waggon-load, the waggon drawn by oxen would start on its long and tedious journey of some hundreds of miles with its freight of human sufferers, to land them after a month or six weeks at this home among the mountains.

From 1816 to 1845 over 400 lepers were admitted into this asylum. The regulations, however, were not very strict, and the patients were allowed to have their friends with them, and were allowed to come and go as they wished. Their detention was only a voluntary one.

Soon it was found that Hemel-en-Aarde was not a satisfactory place for a leper hospital; it was too far from the seat of government, and the patients could not get the medical attendance they required. Within five years of its formation it was decided to remove the patients to a more suitable locality, but it was not until 1845 that the change was made. At that time the colonial Government, requiring additional accommodation for lunatics and paupers, had made use of the old military buildings and convict stations at Robben Island for the reception of these patients. A portion of this establishment was also fitted up for the reception of the leper patients from Hemel-en-Aarde, who were brought hither in 1845 and 1846. Ever since 1845 the leper asylum on Robben Island has given accommodation to some lepers, chiefly of the pauper class.

Segregation was by no means complete, for the patients were allowed to do pretty well what they wished. They were allowed to leave the island when they wished. Many of those who left the island did not return, others after paying a visit to the mainland and their friends returned to the island. As only those lepers who were unable to take care of themselves availed themselves of the Robben Island asylum, the number of admissions to the asylum is no criterion of the number of lepers in the colony.

In 1883 the question of leprosy and its spread was the subject of a special inquiry by a Parliamentary Commission, who, from the evidence of a number of witnesses examined by them, came to the conclusion that leprosy was decidedly on the increase in the colony, and they recommended that some steps should be taken to check its spread.

The report of the Leprosy Commission is as follows :

"1. That leprosy prevails extensively in the colony, and is steadily spreading amongst both white and coloured classes.

"2. That no efficient steps have been taken hitherto to prevent the spread of this loathsome disease, and to avert the terrible evils which threaten society through heredity, and in other ways, from the indiscriminate intercourse and intermarriage of lepers with other classes of the community.

"3. That it has been conclusively proved to your committee that by proper measures, energetically and efficiently carried out, it is possible to arrest the further progress of the disease, and ultimately to stamp it out altogether.

"4. That for the accomplishment of this object an act for the compulsory segregation of all lepers is necessary, and the establishment of leper institutions in suitable localities where perfect isolation can be secured.

"Your committee, therefore, recommend for the protection of the public and in the interests of humanity, as well as for the sufferers themselves, that the Government should, so early as possible, take steps to secure the passing of a compulsory Leper Act, and the commencement of a system of isolation."

In the following year the Leprosy Repression Act was passed, but for some reason it was not promulgated.

In 1889 the matter was again brought before Parliament, and the fact was established that leprosy was making vast strides, and that there was urgent need of segregation. A select committee was appointed to inquire into the matter, and the result of their inquiries was that they reported, *inter alia*—

"Leprosy is on the increase in the colony. Many of the district surgeons say that in their particular districts there is no such increase, and others again are unable to express any opinion upon the question, but in the more populous districts of the colony, such as the Cape and the Paarl, and even in some outlying and less popular districts, such as Alexandria and Stockenstrom, the district surgeons report a marked increase in the number.

"Your committee estimate the number of lepers in the colony to be upwards of six hundred."

As the result of this inquiry steps were at once taken to put the Leprosy Repression Act of 1884 into force. Hospitals had to be built for the patients, as the buildings on Robben Island hitherto used by the patients were not only unsuitable for an asylum, but were too small for the reception of all the lepers in the colony. The foundation stone of the first leper pavilion was laid by Sir Henry Loch, the Governor of the colony, in April, 1891, since which time six pavilions for male lepers and five pavilions for female lepers have been built.

The Leprosy Repression Act was promulgated in May, 1892, when a large number of patients were drafted to the island from the various districts of the colony, and from the Orange Free State and British Bechuanaland.

In the subjoined table, I have shown the number of lepers admitted, discharged, and died in the settlement on Robben Island, from the time it was first opened for the reception of patients in October, 1845, until the 30th of June, 1894. The European portion of the Cape Colony proper is bounded on the east by the native territories, on the north by Basutoland, the Orange Free State, and British Bechuanaland, beyond which are the Transvaal Republic, the colony of Natal, and the native territories of Zululand, Swaziland, and Pondoland—the last recently annexed to the Cape Colony. Leprosy exists in each of these countries to a considerable extent. I have thought it best in dealing with the subject of leprosy in South Africa to take each of these in detail, indicating how the disease was probably introduced into the country, and its prevalence at the present time.

Leprosy in Basutoland.

Until 1835 the Basuto nation was a quiet and peaceful race, and, although surrounded on all sides by European and native tribes, the Basutos kept to themselves, and had little if any intercourse with their neighbours. During the year 1835, however, their chief "Moshesh" took advantage of a native war in the Cape Colony to make a raid upon the native territories adjoining Basutoland; his armies entered these countries, and devastated the land. This was the beginning of a free intercourse between the Basutos and the neighbouring tribes. Hottentots and Bushmen, who were always a more or less nomadic people, soon settled in Basutoland, and with them brought the loathsome disease. The Basuto name for the disease is "Lefer le Bova," or Bushman disease, which clearly indicates the manner in which the disease was introduced into the country. After the great wars in which the Basutos were engaged the country became much impoverished, and, by the order of the chief, large numbers of men left the land to work elsewhere.

In 1872 they visited Kimberley for that purpose in very large numbers, and the missionaries who live in Basutoland state that from that period leprosy became very prevalent in Basutoland. The late Dr. Casilis, who lived for thirty years in Basutoland, stated that until twenty-five years ago the disease was confined to strangers in the land, and was not known to affect the Basutos and old inhabitants of the country. I think, therefore, it can fairly be concluded that leprosy was introduced into Basutoland after the great wars of 1835, but that it was only during the last twenty-five years that it became common and prevalent in Basutoland.

The population of Basutoland is about 225,000; of these about 250 are lepers. In the Orange Free State there are a large number of Basutos working as servants, &c. Within the last two years the Orange Free State Volksraad has passed a law making segregation compulsory. To evade this law many of the natives have left the Free State for their own country, so that Basutoland is at present a land of refuge for this unfortunate class of people, and many have gone there who do not really belong to the country. It is, however, impossible to say how many of the lepers in Basutoland are refugees, and how many actually belong to the country. The Basutos themselves state that leprosy is decidedly on the increase in their country.

Orange Free State.

The history of leprosy in the Orange Free State is identical with that of the Cape Colony, as the two colonies are inhabited by the same people, and the intercourse between the Orange Free State and the colony has always been free.

The disease was probably introduced into the Orange Free State at the time of the exodus of the colonial farmers into that until then unknown country. It has increased *pari passu* with the increase of leprosy in the Cape Colony; at present there are upwards of 150 lepers in or belonging to that republic. When the Leprosy Repression Act of 1884 was promulgated in the Cape Colony in 1892, the Free State Government made an arrangement with the colonial Government by which our Government took charge of their coloured lepers; for that purpose wards for their accommodation were built on Robben Island, and patients have been sent to the island. The European lepers are segregated within the republic.

Leprosy in Griqualand East and Transkeian Territories.

In 1863, for political reasons, the Griquas, under their chief Adam Kok, were moved from the western portion of what is now the Orange Free State, and from the present district of Griqualand West, to the southern slopes of the Drakensberg Mountains, where they formed the present colony of Griqualand East. The journey was a long and tedious one, as the country through which the multitude had to pass was in its primitive wild state. The Griquas—a branch of the Hottentot race—suffered very considerably from leprosy, and in the long journey they left their mark behind them, for they not only introduced leprosy into the new country, but leprosy prevails to a great extent among the people through whom they passed on their way to their new home.

The head-quarters of the new colony was called Kokstad, after the chief Adam Kok. From this point as a centre leprosy spread far and wide through the neighbouring territories, though the largest proportion of lepers is still found in the neighbourhood of Kokstad.

1. The district surgeon of Kokstad reports that the disease was introduced into the colony in 1863, that it is on the increase, and that there are at present 43 known lepers, but that there are it is believed about 80 cases in his district.

2. The district surgeon of Umzimkulu, the furthest removed district from Kokstad, says there are only 3 known lepers in his district, and that the disease is apparently not on the increase.

3. The district surgeon of Mount Frere says that the disease was first discovered in his district about ten years ago. There is no evidence that it is on the increase, and there are only 6 known cases.

4. The Resident Magistrate of Qumbu says that leprosy has only lately been introduced into his district, that it

is decidedly on the increase, and there are upwards of 20 cases known.

5. The R. M. of Umtata states that leprosy was introduced into his district by the Hottentots about seventy years ago, and that there are at present 50 cases known.

6. The R. M. of Butterworth states that the natives of his district were unacquainted with the disease until they came in contact with the Hottentots, that the disease is on the increase, and that there are now 49 known cases in the district.

7. The R. M. of Ngamatsare states that the disease was introduced into his district by the Headman Mnegania, who contracted it while living with some Hottentots in the Cape Colony about twenty-two years ago, that the disease is not increasing to any serious extent, and that there are 50 cases known.

8. The R. M. of Idutywa states that the disease was introduced into his district in about 1860, that it is on the increase, and that there are 22 known cases.

9. The R. M. of Willowdale states that it was only very lately introduced into his district by the Hottentots, that it is spreading, and that there are 37 cases known.

10. The R. M. of Kentani says that the disease appears to have been introduced by Hottentots from the Cape Colony in about 1836, that there is no evidence that it is on the increase, and that there are 18 cases known.

11. The R. M. of Elliotdale says that the disease was first introduced into his district in about 1883, that it is on the increase, and that there are now 8 cases known.

12. The R. M. of Mganduli says that leprosy made its appearance in his district about eight years ago, that it is rapidly on the increase, and that there are now 40 cases known.

13. The R. M. of Engcobo states that the disease was probably introduced into his district by the Hottentots, that it is on the increase, and that there are 68 cases known.

14. The R. M. of St. Mark's states that leprosy was introduced into his district by the Hottentots about the middle of the present century, that there is no evidence that it is on the increase, and that there are 15 cases known.

15. The R. M. of Cala states that the disease was introduced into his district by the Hottentots, that it is not on the increase, and that there is only one case known in the district.

16. The R. M. of Tsolo says that leprosy was discovered in his district in 1874 for the first time, and that it is not on the increase. In 1886 there were 11 cases, now there are only 4 known.

17. The R. M. of Maclear says that leprosy was supposed to have been introduced into his district by the Hottentots (Griquas), that it is not on the increase, and that there are only 5 cases known at present.

18. The R. M. of Mount Fletcher says that leprosy was introduced into his district about 1860 (probably 1863), that it is on the increase, and that there are 14 cases known at present.

19. The R. M. of Matatiele thinks that leprosy was introduced into the district from Basutoland about thirty years ago, but it was more probably introduced by the Griquas, who passed through a portion of Basutoland in travelling from their old home to the new. The disease is on the increase, and there are about 20 cases in the district at present.

The Transvaal Republic.

This republic was formed in 1835 by the Boers, who, to escape from the trammels of civilisation, were continually moving onwards into the then uncivilised portions of the African continent. A large portion of the country claimed by this republic is still in the hands of the natives, and is almost unknown to Europeans. Leprosy exists among these natives, but to what extent it is impossible to say. Even in the more civilised parts, as no proper census has been taken, it is difficult to arrive at the truth about leprosy. A small hospital for lepers has long existed close to Pretoria, the chief town of the republic, in which about ten unfortunate lepers find a refuge.

Now that the leprosy question has been brought prominently before the world, each country is awakening to the fact that the evil is amongst its people, and that it is spreading.

The Transvaal Government has now enlarged its leper asylum, and the number of lepers which it now accommodates is upwards of twenty; but this cannot be taken as a criterion of the number of lepers existing in the country, for as there is no law making segregation compulsory, only the paupers avail themselves of the shelter and privileges of a home.

Natal.

Leprosy appears to have been introduced into this colony at a comparatively recent date, as no mention is made of the disease until the middle of the present century.

The following account of its introduction is the one on which credence is placed by both the Europeans and natives of Natal. It appears that in about 1840 two native men left the colony of Natal for the Cape Colony, where in Grahamstown they worked for three years. Whilst in Grahamstown they lived with a coloured woman who was suffering from leprosy; this woman they left behind them when they returned to Natal in 1843. On their return to their native land the two men married healthy native women. Within two years of their return to Natal they developed leprosy, and one of the men died of the disease within three years.

Thus leprosy was introduced into the kraal where these men resided, and from this point as a centre the disease spread from kraal to kraal and from tribe to tribe, till at the present time there is not a single tribe free from disease. Every tribe in the colony—and there are many of them—is infected to a greater or less extent, but the most cases are still found in the tribe to which the two original lepers belonged.

In 1886 the disease had become so prevalent that a Commission was appointed by the Government to inquire into the matter, and to devise some means to check its spread. Natal, like the other South African states, has a large native population, and as leprosy is at present confined to the blacks, the information obtainable is not very reliable, so that the number of cases reported to the Commission was probably far short of the actual number then existing; nevertheless the Commission were able to obtain records of upwards of 100 lepers, so that in forty-three years the number of lepers had increased from 2 to 100 or more.

The Hon. the Under Secretary of Natal, Mr. Bird, informs me that since 1886 there have been 132 additional cases of leprosy reported to the Government, so that there are at present over 200 lepers in that colony, all natives.

A mild form of segregation is now being enforced, and it is hoped that this will check the spread of the disease.

British Bechuanaland.

The authorities in Bechuanaland have made an arrangement with the Cape Colonial Government by which all the lepers from Bechuanaland are brought to Robben Island for isolation and treatment.

The number of cases admitted into this asylum since this arrangement was made is only seven, all coloured people, so that it is evident the disease is not very prevalent in that colony, which may be accounted for by the dryness of the climate, and the consequent sparseness of the population.

Leprosy was probably introduced into Bechuanaland by nomadic Bushmen from the Orange Free State.

Pondoland (recently annexed to the Cape Colony).

I have learned from the magistrates stationed in Pondoland that there are no lepers in that country, which can be accounted for by the fact that all suffering from the disease are excluded from the country by the chiefs under penalty of death.

Zululand and Swaziland.

No reliable information can be obtained as to the prevalence of leprosy in these native territories, but that it does exist to a considerable extent is well known; whether it is on the increase or not is impossible to say, but judging from the habits of the other uncivilised natives I should say not, for, as a rule, the natives kill or ostracise all objectionable persons.

In conclusion I may state that in a country like South Africa, with its large native population, it is almost impossible to obtain thoroughly reliable information, especally about a disease like leprosy; but I have made very careful inquiries, and have obtained the information contained in this paper from reliable sources.

I am especially indebted to the Hon. J. Rose-Innes, C.M.G., Under Secretary of Native Affairs of the Cape Colony, who obtained the information from the various magistrates in Griqualand East and the Transkeian Territories for me; and also to Mr. Bird, Under Secretary of Natal, the State Secretary of the Transvaal Republic, and the British Resident in Basutoland.

Roughly speaking, the number of lepers at present known in the various South African colonies and states is as follows:

Cape Colony proper	600
Griqualand East	250
Transkeian Territories	357
Basutoland	250
Bechuanaland	10
Natal	200
Orange Free State	150
Transvaal Republic	30
Total number	1750

The facts and figures quoted clearly prove—

(1) That leprosy has been known in the Cape Colony since the middle of the last century.

(2) That the disease has made rapid progress from the beginning of this century, but more especially during the last fifty years.

(3) That the Hottentots, of whom the Griquas are an offshoot, were, on account of their nomadic nature, the cause of the spread of the disease amongst the Bantu races.

(4) That the disease is much more prevalent in South Africa than is generally known.

The various Governments have awakened to the fact that something must be done to check the spread of the disease. The Cape Colony, the Orange Free State, Bechuanaland, and Natal have each adopted some form of segregation, and it is hoped that by this united action an effectual check will be put upon the spread of the loathsome disease.

Table showing the Number of Lepers admitted, discharged, and died in the Robben Island Leper Asylum each year since its formation in 1845 *until the* 30*th June,* 1894.

Date.	Admissions.	Discharges.	Deaths.
1845	37	—	—
1846	35	—	—
1847	17	—	—
1848	26	—	—
1849	18	—	—
1850	14	—	—
1851	7	—	—
1852	13	—	—
1853	22	5	15
1854	14	9	9
1855	17	10	12
1856	21	15	12
1857	18	7	11
1858	18	6	11
1859	19	6	13
1860	16	2	10
1861	30	15	15
1862	20	4	8
1863	23	15	11
1864	13	3	9
1865	35	17	18
1866	19	7	10
1867	20	6	14
1868	21	6	13
1869	15	10	11
1870	25	11	15
1871	27	27	9
1872	17	18	9
1873	17	6	7
1874	19	6	15
1875	13	13	9
1876	17	9	5
1877	26	11	8
1878	19	10	7
1879	13	10	7
1880	15	2	10

Date.	Admissions.	Discharges.	Deaths.
1881	24	4	12
1882	21	15	17
1883	23	13	5
1884	25	5	10
1885	14	0	13
1886	21	5	9
1887	51	13	12
1888	40	7	14
1889	51	11	32
1890	21	8	23
1891	52	2	21
1892	338	7	40
1893	250	12	114
1894	52	7	37
Total . .	1697	375	776

ROBBEN ISLAND;
November 14*th*, 1894.

ON SPONTANEOUS RECOVERY FROM LEPROSY.

BY

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ON SPONTANEOUS RECOVERY FROM LEPROSY.

A MEDICAL man in the practice of his profession is very apt to run in a groove, from which it is difficult to escape; he runs with the crowd in a beaten track, and the longer he runs the more difficult it is for him to leave it. The track may be a fairly broad one, but few men have the temerity to leave it and explore the unknown regions adjoining it: for the track is bright and clear, and the way easy; but the land is dark, and full of the pitfalls of criticism and controversy. It is certainly a very safe course to adopt to drift with the stream, but in my opinion it is the greatest stumbling-block to the progress of medical science.

If a medical man in the daily routine of work sees in this forbidden region dim and uncertain shadows, let him pursue them, and see what more light they can throw upon the path, and if it is possible by the knowledge thus gained to remove some of the rocks which encumber the road of medical practice. Surely it is the duty of every medical man to try and make this broad path smooth and easy, not only for the sake of those who have to tread after him, but for the unfortunate patients on whose behalf the track has been so well worn.

A few months ago, at a Medical Congress held in Cape Town, I ventured to state that in my opinion a certain number of lepers were self-cured; but I was off the beaten track, and my views met with opposition. Some medical men stated that they did not recognise the term; others, that it was an unhappy term; others, that it was a contradiction;

and others, that they were not prepared to acknowledge the fact.

I had, however, carefully studied the subjects, and by following certain ideas had come to the conclusion that, notwithstanding these adverse criticisms, my observations were correct.

The matter is such an important one, not only medically but socially and politically, and to the patients themselves, that I have chosen it as the subject of my paper.

I am of opinion that a certain number of lepers are actually cured, and if I can only prove the correctness of my opinion to the satisfaction of the medical profession, what a world of hope will be infused into the heart of every leper in the world! and with the hope will come contentment and happiness, where now there is misery and despair.

In discussing the subject I shall first deal with the objections, and then give my reasons for coming to the conclusions that there are self-cured lepers.

(1) Some medical men do not recognise the term. I dare say not, as the term is a new one; but the fact of not recognising a term is, in my opinion, a mere quibble, and is hardly worthy of consideration.

(2) Some say it is an unhappy one. This may be true, but in my opinion it is a very expressive one, and provided the term conveys the meaning attached to it the objection is a frivolous one.

(3) Others say it is a contradiction. I said that leprosy was not amenable to treatment, yet in certain cases the disease was cured. I adhere to that statement. All who have had to treat leprous patients must agree with me that medical treatment, be it ever so skilful, is of little avail. In certain ways the disease may be temporarily arrested, but as a rule it goes on steadily from bad to worse, until death removes the patient from a life that is almost worse than death.

Many drugs have been tried, and many treatments adopted, but without any permanent benefit to the patients. Some medical men claim to have actually cured the disease, but of this I am extremely sceptical, so that I am still of opinion that medical treatment is useless and powerless, and of no use for the cure of leprosy. In a few cases, however, as I shall presently endeavour to prove, the disease is cured spontaneously, not from the effects of external applications or internal treatment, but from causes at present unknown, which exist within the body itself; the system throws off the disease—it cures itself; and therefore I am of opinion that I am justified in calling such cases "self-cured."

(4) Some medical men do not acknowledge the facts; they agree that in certain cases the disease is arrested, but they cannot allow that they are cured. This is naturally a grave objection, and one, moreover, which it is by no means easy to upset. On a point of this nature one may have very strong views, yet be unable to substantiate them by conclusive arguments. The term "cure" is itself a controvertible one. The meaning of the term is "restoration to health or soundness;" but every medical man knows that, strictly speaking, every "cured" patient cannot be said to have been restored to perfect health. The system is weakened or changed, or the body is left in an unsound state. Remove a tumour from a patient, the scar remains, though the patient is said to be cured; and so with any disease. It is very seldom that the system is attacked by an acute disease without something remaining behind to the detriment of the system; thus the cure of a patient does not always mean the restoration of the body to a perfect state, or of absolute health to the system, but it means something much more imperfect and indefinite. Smallpox leaves its indelible mark, and yet it is considered cured though the mark remains; and yet because leprosy leaves its mark, it is considered arrested only, and not cured. Of these sceptics I should like to ask the following:

If you have been treating a disease, and have brought it to such a condition that the active symptoms disappear never to return, would you not consider it cured?

If phthisis, arrested in childhood, has not shown itself in adult life, would you not consider it cured?

If syphilis, properly treated in youth, does not show symptoms, in age, of recrudescence, would you not be justified in saying that the disease had been eradicated from the system?

If, after the removal of a malignant growth, it does not recur, say within ten years, would you not be content to consider it a cure? Yet you, who must consider such cases cured, will not allow that leprosy is cured, though it passes into the same stage,—for after a certain period the ulceration in anæsthetic leprosy ceases never to recur; in fact, the disease is cured as effectually and completely as any cure is ever made in the practice of medicine. Some medical men say, "We acknowledge that such cases exist, but they are only arrested, and if you wait long enough the ulceration will start afresh." But surely there is a limit to everything. Why be Micawbers in dealing with lepers? Why keep the patients languishing in an asylum until death removes them from your expectant eye, watching for something to turn up—watching for the ulceration to recur? The ulceration has ceased, and if you keep the patient in the hospital waiting for the ulcers to break out again, he will die probably of old age before you are satisfied.

When I first took charge of the leper asylum here I was struck with the fact that, as a rule, the disease was much more acute and rapid in its course than was generally supposed, and that most of the patients died within a very few years of their admission; a few, however, after a battle for life, seemed to regain their health, and then lived on to old age unless their life was cut short by intercurrent affections.

I at once inquired into this matter, and into the cause of this apparent anomaly, and was forced to the conclusion that, with few exceptions, these long-lived cases were free from disease.

Leprosy exists here in four forms—the anæsthetic, tubercular, mixed, and syphilitic,—each form running a distinct course. Self-cured cases occur only in anæsthetic leprosy, therefore I shall confine my remarks mainly to this form of the disease, though in passing I should like to draw your attention to a curious and most interesting fact in connection with the tubercular form of the disease. In anæsthetic leprosy medical treatment is powerless to cure the disease, but in my opinion the disease is occasionally self-cured; in tubercular leprosy the disease is never self-cured, but I believe the time is not far distant when this form of the disease will be cured by proper medical treatment. Tubercular leprosy is due to the presence of bacilli and their products in the tissues of the body. I have noticed that the course of this form of the disease is often temporarily modified by intercurrent inflammatory affections. An attack of measles arrests the disease, and causes the tubercles to subside in some cases for years; smallpox supervening on tubercular leprosy checks the latter disease for a time, if not permanently; erysipelas always causes the tubercles in the part attacked to subside. These are most interesting facts, and I think they point to the way in which this form of the disease in its early stages will yet be cured. Leprosy, measles, smallpox, and erysipelas are all due to bacilli, and in each the disease manifests itself by preference in the face first; therefore it is probable that the bacilli themselves are related or are influenced by the same forces. We do not know how these or any other bacilli live in the body; we do not know, for instance, from which secretions or tissues the bacilli draw their nourishment; but we do know that certain conditions are necessary for their growth in life, and we do know that each class of bacilli requires its own conditions. It is probable that the bacilli of these diseases are nourished and supported by the same secretions and tissues in the body. We know that in the battle for existence the stronger always pushes the weaker to the wall, be it in man, animal, or plant. Measles, smallpox, and erysipelas are acute diseases, and therefore the bacilli are more active and virulent than those of the slow-growing leprosy; hence it is probable that the stronger bacilli of the intercurrent affections push the weaker bacilli of leprosy to the wall; but, be this as it may, the fact remains, that by the introduction of these bacilli into the system of a leprous patient the disease is checked for a time, *i. e.* the leprous bacillus is in some way acted upon to its own detriment, but to the benefit of the patient. This being so, would it not be possible, by some system of cultivation of, and vaccination with, these bacilli, not only to check the growth of the leper bacillus, but to entirely destroy it, and thus remove it from the body? I am of opinion that the solution of the leprosy question will be found in the use of the vaccinator's lance, and I believe that it is only by the introduction of an antagonistic bacillus into the system of a leprous patient that the disease will be cured.

In anæsthetic leprosy the symptoms are due to disease of the nerves. In a recent case the affected nerves are thickened and soft, due to the sheath being injected and swollen by inflammatory exudations. At this stage the patient, as in ordinary neuritis, suffers acute neuralgic pains extending to the fingers; the nerve itself is highly sensitive, though sensation in the parts supplied by the nerve may be partially diminished. At a later stage the nerve becomes smaller, firmer, and nodulated, due to the contraction of the inflammatory products; the contraction causes pressure upon the nerve-fibres and their subsequent destruction; the nerve-fibres are at first irritated, thus causing contraction of the fingers and toes; *pari passu* with the destruction of the nerve-fibres comes anæsthesia of the parts. In the last stage the nerve-fibres are destroyed, and all that remains is a fibrous band—a remnant of the original sheath. The nerve-supply to the extremities is thus destroyed and lost; the bones through these atrophic changes become necrosed, and are removed by absorption or ulceration.

The symptoms thus described are exactly what would be expected from the nature of the disease; they are, in fact, identical with the history of the symptoms due to the destruction of a nerve from any cause. In an ordinary typical case of anæsthetic leprosy both hands and both feet are equally affected, and both seventh nerves are paralysed,—in fact, it is a symmetrical disease. The disease runs a rapid course, and the necrosis and ulceration cause so much irritation, and there is such a drain on the system, that few patients survive it. In a few cases, however, the necrosis ceases, the ulceration stops, and the wounds heal, though of course the lost parts are not restored.

In these so-called self-cured cases the disease does not break out again; the anæsthesia may be, and is generally, complete and permanent, but the ulceration has ceased—never to return. We do not know why the ulceration ceases; we cannot detect any alteration in the blood or tissues to account for the change; we cannot do anything to bring about or accelerate this much-to-be-desired result; the disease takes its own course and works out its own cure, and if the patient can stand the terrible drain on his system the disease will certainly become self-cured.

There is one point in connection with these self-cured cases that deserves special notice here, and that is the presence in many of them of a perforating ulcer.

On page 17, vol. ii, ninth edition of 'Erichsen's Surgery,' under the heading of "Perforating Ulcer of the Foot," is described a case typical of the perforating ulcer found in leprosy, but in this case the ulcer is due to ordinary disease of the nerves supplying the part.

Perforating ulcers, therefore, are not confined to leprosy, but in all cases are due to disease of the nerves.

I contend that the perforating ulcer in leprosy, though one of the symptoms of the disease, is by no means necessarily a sign that the disease exists, for I am of opinion that the ulcer often remains long after the disease itself has been cured. The bones become necrosed through a defect in their nerve-supply, and they become virtually foreign bodies, whose removal is necessary before ulceration can cease. Many of the diseased bones, on account of their size or situation, or for other obvious reasons, cannot be removed at once in the ordinary way by absorption or ulceration, and therefore remain *in situ* a relic of the past, but not a sign of active disease.

I removed a spiculum of dead bone from the tibia of a man who, twenty years previously, had suffered from syphilitic periostitis, and yet no one would be justified in saying, because the dead bone had not been removed earlier, that the patient had been suffering from syphilis all those years.

Another patient, as a complication of typhoid fever, had pneumonia which developed into fibroid phthisis, of which he died ten years after, yet no one would be justified in saying that this patient was suffering from typhoid fever all those years.

The necrosed bone causing the perforating ulcer in leprosy is certainly due to changes produced by the disease, but no one can be justified in saying that until the dead bone is removed, the patient is suffering from the disease itself.

The fibroid phthisis was a result of the typhoid fever, but was not the fever itself; the necrosis causing the perforating ulcer is a result of leprosy, but it is not the disease itself.

To prove that the ulcer is only a result of the disease, and not an active symptom, remove the dead bone by operation, and the wound will heal as readily as in ordinary necrosis, and the ulcer will disappear. The facts appear so simple, and yet the presence of the perforating ulcer is the stumblingblock over which so many fall; they cannot be made to understand that though this special form of ulceration commences while the disease is active, yet it may continue long after the disease has ceased to exist.

In my opinion, therefore, the presence of the perforating ulcer in leprosy is no proof that the disease is present.

It may be asked, at what point does the patient cease to be a leper? I am of opinion that the patient ceases to be a leper when the leper bacillus leaves the body, for to be a leper without having the leper bacillus in the body is obviously impossible.

Now can we in any way prove that the bacillus leaves the body, and at what time the disease becomes self-cured?

We know that the disease is due to a bacillus, and we know how this bacillus acts to give rise to such terrible suffering and deformity; we know, further, that there is an acute stage when the bacillus is apparently very active, and we know that this stage is succeeded by one of at any rate quiescence. In all diseases due to bacilli the disease follows one of two courses: (1) the disease runs a rapid course ending in recovery or death; or (2) the disease, beginning insidiously, becomes more and more severe until it ends in death.

In the first form there is a hope of life; in the second form the bacillus, though not such an active or virulent one, never leaves the body, but invades more and more of the tissues.

Under the first head typhoid fever may be classed; under the second, phthisis.

Now under which of these two heads may leprosy be classed? It is a disease which runs a rapid course, and in a large majority of cases ends in death; but a few of the cases get over the acute attack, and, so far as the disease is concerned, may live for ever, *i. e.* the cause of the disease has left the system as surely as the bacillus of typhoid fever leaves the body after it has run its course. Leprosy is not such an indefinite disease as one would make out,—it runs a definite course, and the patient then dies or recovers. The reason why it has hitherto been considered so indefinite is the non-recognition of the self-cured cases.

Expressions like this so often occur in works on leprosy: "The duration of the disease is generally about eight years, but in some instances it has been known to last sixty years." The study of the disease to a novice is a mystery to unfold, whereas in reality it is a simple disease. Like all diseases, the course it takes is modified by circumstances; it may end fatally or otherwise in about six years, or it may continue a little longer, but, so far as my experience goes, in the anæsthetic form of the leprosy, the maximum duration of the disease is about eleven years from the time that the first symptoms appear, or, including the incubating period, about thirteen years. With few exceptions, all the cases which exceed this period are no longer lepers.

I have prepared three tables showing the duration of the disease in the Cape Colony. Since 1871, and until the 30th June, 1894, excluding the patients who were discharged from time to time, there were admitted into the Asylum on Robben Island 965 leper patients. Of these 402 died.

There are now in the hospital 563 leper patients.

44	lepers have	been in the hospital	less than	1	year.
196	,,	,,	between	1— 2	years.
248	,,	,,	,,	2— 3	,,
19	,,	,,	,,	3— 4	,,
6	,,	,,	,,	4— 5	,,
21	,,	,,	,,	5— 6	,,
4	,,	,,	,,	6— 7	,,
8	,,	,,	,,	7— 8	,,
5	,,	,,	,,	8— 9	,,
1	,,	,,	,,	9—10	,,
3	,,	,,	,,	10—11	,,
1	,,	,,	,,	12—13	,,

1 leper has been in the hospital between 13—14 years.
1 ,, ,, ,, 15—16 ,,
1 ,, ,, ,, 16—17 ,,
1 ,, ,, ,, 17—18 ,,
1 ,, ,, ,, 19—20 ,,
2 ,, ,, ,, 21—22 ,,

This shows that out of this large number of patients at present in the wards, only eight have been here longer than eleven years.

Of the 402 patients who have died in the asylum since 1871—

151 died within 1 year of admission.
141 ,, 2 years ,,
33 ,, 3 ,, ,,
25 ,, 4 ,, ,,
16 ,, 5 ,, ,,
12 ,, 6 ,, ,,
6 ,, 7 ,, ,,
10 ,, 8 ,, ,,
5 ,, 9 ,, ,,
1 ,, 11 ,, ,,
1 ,, 13 ,, ,,
1 ,, 16 ,, ,,

402

So that out of 402 patients who died, only two lived longer than eleven years in the hospital.

From these tables we learn that the duration of the disease is within eleven years, and that only a very small percentage of the patients suffering from leprosy live longer than eleven years after admission into hospital.

There are, however, a few patients in the asylum who were admitted before 1871.

Of the patients in the hospital I have been able to obtain fairly reliable histories of 516 cases. Of these cases—

4 contracted the disease in 1894.
19 ,, ,, ,, 1893.
30 ,, ,, ,, 1892.

44 contracted the disease in 1891.
54 ,, ,, ,, 1890.
41 ,, ,, ,, 1889.
26 ,, ,, ,, 1888.
55 ,, ,, ,, 1887.
22 ,, ,, ,, 1886.
35 ,, ,, ,, 1885.
26 ,, ,, ,, 1884.
18 ,, ,, ,, 1883.
32 ,, ,, ,, 1882.
101 ,, ,, ,, before 1882.

Of these 101 cases who have had the disease longer than eleven years, I have made the following extracts from the case books.

Explanation of Abbreviations.

T. Toes.	Cont. Contracted.	F. Fingers.	Ab. Abbreviated.
H. Hand.	N. S. No sores.	Hs. Hands.	P. U. Perforating ulcer.
Ft. Feet.	Fts. Feet.	Tum. Tumified.	

Females.

No.	Name.	Form.	Contracted.	Remarks.
4	A. K.	A.	1879	T. gone, F. cont., N. S.
13	M. J.	,,	1870	T. and F. cont. and ab., N. S.
14	C.	,,	1872	R. H. amp., L. H. F. gone, Ft. gone, N. S.
16	K. A.	,,	1881	Hs. cont. and contorted, N. S.
17	K. Z.	,,	1872	F. and T. gone, N. S.
18	J.	,,	1877	F. and T. gone, N. S.
79	L. S.	,,	1877	H. cont. and deformed, N. S.
80	L. B.	,,	1860	F. and T. gone, N. S.
82	S. H.	,,	1870	F. and T. gone, P. U. one foot.
87	S. S.	,,	1859	F. and T. ab., N. S.
88	T. A.	,,	1860	F. gone, N. S.
90	S. A.	,,	1877	H. cont. and contorted.
91	W. S.	,,	1878	F. cont., T. gone, N. S.
96	L. H.	,,	1876	H. cont. and ab., N. S.
103	M. L.	,,	1881	F. cont. and ab., P. U. on foot.
108	H. R.	,,	1871	F. and T. ab., P. U. sole foot.
112	L. F.	,,	1871	H. comp. but cont., T. ab., N. S.
114	N. R.	,,	1875	H. ab. and shapeless, ankle-jt. gone, N. S.
121	H. H.	,,	1874	F. and T. ab., P. U. one foot.
136	M. F.	,,	1876	F. cont., P. U. one foot.

No.	Name.	Form.	Contracted.	Remarks.
140	F. P.	A	1851	F. and T. gone, P. U. one foot.
151	C.	„	1874	F. cont. and contorted, T. gone. N. S.
156	K.	„	1881	F. and T. gone, N. S.
158	A. A.	„	1876	F. cont. and ab., T. gone, N. S.
159	S. S.	„	1837	F. and T. gone, N. S.
160	E. P.	„	1880	F. gone except one thumb, T. gone, N. S.
164	R.	„	1873	Hs. and Ft. gone, N. S.
198	M.	„	1855	R. H. F. gone, L. H. ab., T. ab., N. S.
202	U.	„	1880	F. and T. ab., N. S.
220	S. S.	„	1874	F. cont., T. ab., P. U. one foot.
			Males.	
1	C. M.	A.	1878	F. and T. ab. and cont., N. S.
3	C. M.	„	1878	F. and T. cont. and ab., N. S.
4	C. B.	„	1878	F. and T. cont. and ab., N. S.
8	C. W.	„	1860	F. ab. and cont., T. gone, N. S.
9	F. R.	„	1877	F. and T. cont. and ab., P. U. one foot.
14	C. M.	„	1854	F. cont., ab. and tum., N. S.
27	H.	„	1870	F. and T. cont. and ab., P. U. one foot.
29	D. S.	„	1867	F. and T. cont., P. U. one foot.
30	J. H.	„	1870	F. and T. cont. and ab., P. U. one foot.
33	H. K.	„	1873	F. and T. cont. and ab., P. U. one foot.
35	A.	„	1877	F. and T. cont., P. U. one foot.
36	A. S.	„	1873	F. and T. cont. and ab., P. U. one foot.
39	J. J.	„	1875	F. and T. gone, N. S.
40	S.	„	1872	F. and T. cont. and ab., N. S.
52	P. G.	„	1877	F. and T. cont. and ab., P. U. one foot.
63	E.	„	1867	F. cont., N. S.
66	T. S.	„	1869	F. and T. cont., P. U. one foot.
72	C.	„	1875	F. and T. cont. and ab., N. S.
76	D.	„	1875	F. and T. cont., N. S.
84	B.	„	1879	F. and T. cont. and ab., N. S.
92	J. M.	„	1878	F. and T. truncated, N. S.
94	J. G.	„	1879	F. and T. gone, N. S.
102	K.	„	1878	F. and T. cont. and tum., N. S.
106	J.	„	1878	F. ab. and cont., T. ab., P. U. one foot.

No.	Name.	Form.	Contracted.	Remarks.
113	D.	A	1875	F. and T. cont., P. U. one foot.
125	C.	,,	1878	F. and T. cont. and ab., P. U. one foot.
132	M.	,,	1847	F. and T. ab. and cont., N. S.
133	W.	,,	1879	F. and T. ab. and cont., P. U. one foot.
138	D.	,,	1871	F. and T. ab. and cont., N. S.
142	C. J.	,,	1872	One H. amp., one wrist gone, ankles gone, N. S.
152	T. K.	,,	1874	F. and T. cont. and ab., P. U. one foot.
157	H. T.	,,	1873	F. cont. and ab., T. ab., P. U. one foot.
165	C.	,,	1856	F. and T. cont. and ab., P. U. one foot.
167	F.	,,	1867	F. and T. cont. and ab., N. S.
175	M.	,,	1877	F. and T. cont. and ab., N. S.
176	G. G.	,,	1877	F. and T. cont. and ab., P. U. one foot.
181	B.	,,	1880	F. and T. cont. and ab., ulceration continuing.
193	P. S.	,,	1860	F. and T. truncated, N. S.
195	G. C.	,,	1874	F. and T. cont. and contorted, N. S.
202	M. B.	,,	1854	F. and T. cont. and ab., P. U. one foot.
209	K.	,,	1870	F. and T. cont. and ab., N. S.
226	S. P.	,,	1877	F. and T. cont. and ab., N. S.
231	S. S.	,,	1877	F. L. H. ab. and cont., R. H. semi-cont., N. S.
238	D. P.	,,	1879	F. and T. cont., N. S., suspicion tuber.
244	B.	,,	1873	F. L. H. cont., R. H. semi-cont., N. S.
245	N.	,,	1875	F. cont. and ab., P. U. one foot.
252	K. J.	,,	1872	F. and T. cont. and tum., P. U. one foot.
253	F. H.	,,	1876	F. and T. ab. and cont., N. S.
255	K. B.	,,	1878	F. and T. cont., P. U. both feet.
256	K. K.	,,	1878	F. and T. cont. and ab., N. S.

Of these 101 cases, 72 are without ulcers; the hands and feet have suffered to a variable extent. Each has been subjected to severe ulceration, but this has ceased in some instances for many years. In one instance only the true leprous ulcerative process is still active, and in 28 cases perforating ulcers exist in one or both feet. Many of those in which the ulcerative process has ceased are of shorter duration than some of those in which the perforating ulcer is found. As will be seen from the following table some of the patients who now have perforating ulcers contracted the disease upwards of thirty years ago.

1	contracted	the disease	in	1851.
1	”	”	”	1854.
1	”	”	”	1856.
1	”	”	”	1864.
1	”	”	”	1867.
3	”	”	”	1870.
1	”	”	”	1871.
1	”	”	”	1872.
3	”	”	”	1873.
3	”	”	”	1874.
2	”	”	”	1875.
1	”	”	”	1876.
4	”	”	”	1877.
3	”	”	”	1878.
1	”	”	”	1879.
1	”	”	”	1881.

This shows that the perforating ulcer remains, though the ordinary symptoms of leprosy have ceased to exist for upwards of—in some cases—thirty years.

In all these cases with perforating ulcers the ulcer is due to the necrosed bone, and if the bone were removed by operation the ulcer would readily heal, so that I think it may fairly be conceded that the ulcer is not a sign that the disease exists.

If, therefore, the perforating ulcer is not a sign of the existence of the disease, then those patients who have these ulcers need not necessarily be suffering from leprosy.

Anyone examining the cicatrices and stumps of a person who has passed through the ulcerative stage of leprosy will agree with me that the appearance presented by these is not that of arrestation merely, they appear cured. The tissues are not infiltrated and thickened by inflammatory products, the skin is firm though supple, it is normal in colour, or pale, never red or irritable. If the parts are injured in any way the wounds heal readily, as in ordinary healthy tissues, and the health of the patient is good.

These are the facts which lead me to believe that the duration of anæsthetic leprosy seldom exceeds eleven years, and that almost all the patients who exceed this period are self-cured cases. They all show the indelible marks and bear signs of having suffered from the loathsome disease, but in my opinion the disease has left them, and they are no longer lepers.

It may at first appear that the percentage of cured cases here is higher than in any other country, but in reality this is not the case. In Norway, according to Thin, the statistical report published in 1882 shows the total number of cured lepers in the previous twenty-five years to be 107. In the same period 4891 patients had died.

Leprosy has existed in this colony since 1756, but asylums for the reception of patients suffering from leprosy were first established in 1817. There was no law compelling lepers to enter asylums, so that their stay in the asylum was purely a voluntary one, and the number of admissions into the asylums is no criterion of the number of lepers existing in the colony.

We know that upwards of 400 patients were admitted into the first asylum, which was opened in 1817 and closed in 1846, when the remaining patients were transferred to Robben Island.

Since 1846 there have been admitted into the Robben Island Asylum 1697 leper patients, of whom over 600 have been admitted since the Leprosy Repression Act was put into force in 1892.

For some years, roughly speaking, there have been about 100 cured cases in the leper wards, but, as will be seen by looking at the list of names, many of these are of long standing.

1 case contracted the disease in 1837.
1 ,, ,, ,, 1851.
2 ,, ,, ,, 1854.
1 ,, ,, ,, 1856.

1 case contracted the disease in 1857.
1 ,, ,, ,, 1859.
4 ,, ,, ,, 1860.
3 ,, ,, ,, 1867.
1 ,, ,, ,, 1868.
1 ,, ,, ,, 1869.
7 ,, ,, ,, 1870.
3 ,, ,, ,, 1871.
6 ,, ,, ,, 1872.
6 ,, ,, ,, 1873.
6 ,, ,, ,, 1874.
6 ,, ,, ,, 1875.
4 ,, ,, ,, 1876.
12 ,, ,, ,, 1877.
11 ,, ,, ,, 1878.
7 ,, ,, ,, 1879.
3 ,, ,, ,, 1880.
4 ,, ,, ,, 1881.
7 ,, ,, ,, 1882.

It will, therefore, appear that the self-cured cases in the asylum at present are an accumulation of years. The Leprosy Repression Act was put into force in 1892, and lepers of all classes and grades were collected from all parts and sent to Robben Island. Many of these were, in my opinion, self-cured cases, so that it is not fair to conclude that because there are less than 600 lepers in the asylum, and the number of cured cases is 100, the proportion of cases is unduly high here, higher than it is in any other country. According to Thin, during the twenty-five years ending in 1832 there had been sixty-one cures in the Limgegaard Leper Asylum, against 165 deaths, a proportion of about 1 to $2\frac{3}{4}$. In the Robben Island Asylum since 1853 there have been 776 deaths and 100 cures, or a proportion of about 1 to $7\frac{3}{4}$.

I have quoted these figures in order to compare my percentage of cures with those of another asylum, but for obvious reasons the conclusions derived from such figures are not, strictly speaking, of much value, especially as there is probably some diversity of opinion as to when the disease may be considered cured.

I am of opinion that if it is conceded that the perforating ulcer is not necessarily a sign that the disease is still active, then about 15 per cent. of the anæsthetic cases become cured; if, however, this is not acknowledged, then only about 7 per cent. of the cases become cured.

There are other facts which force me to the conclusion that some lepers do become self-cured, of which the most important are the following:

(1) None of the self-cured cases die of or from the effects of leprosy; the patients may be very much crippled and deformed by the disease, but when it leaves them their general health becomes good; and if they are not carried off by some intercurrent affection they may and generally do live to a ripe old age.

(2) We know that leprosy resists all treatment, nothing that we can do for the patient has any effect on the course of the disease; it goes on from bad to worse, uninterruptedly, until a certain stage is reached when the ulceration ceases.

(3) When the disease reaches this stage the ulcerative process ceases, the ulcers heal spontaneously, and firm cicatrices are formed which do not break down again.

(4) When the anæsthetic parts are accidentally injured or burnt, the wounds are not leprous, and heal very readily.

(5) In the examination of innumerable sections of tissues from these self-cured cases I have not been able to detect the lepræ bacillus.

(6) If the disease is due to the presence of the bacillus, then the patient must be free from the disease when the bacillus is absent.

(7) In a large number of the cases which reach this stage the nerves regain their power to a certain extent, and sensation and the power of motion are restored to the extremities to a variable extent.

(8) Whilst the disease exists there are constant neuralgic pains in the nerves; these pains cease with the self-cure of the disease, and they do not recur.

(9) Authorities all agree that in a few lepers the disease

is permanently arrested, which in my opinion is tantamount to saying the disease is cured.

(10) Some authorities do acknowledge that the disease is in some cases cured.

(11) I believe that the contraction of the tissues resulting from the inflammation caused by the bacillus in the nerves is the cause of the death of the bacilli.

Robben Island;
November 14th, 1894.

BATTERSEA PUBLIC LIBRARIES

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ROBBEN ISLAND ASYLUM.—LEPERS ADMITTED SINCE 1871.

Showing dates of admission, number admitted each year, how long each patient lived in the asylum before he died, total number of deaths, and number of survivors (last column).

DATE.	ADMITTED.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	DIED.	REMAINING.
1871	15	3	3	1	4	2	...	...	...	1	...	...	...	...	...	...	1	15	
1872	8	3	4	...	1	...	...	...	...	...	...	...	...	...	...	...	...	8	
1873	10	1	6	...	...	...	...	...	...	1	...	...	...	...	...	...	...	8	2
1874	9	4	3	...	...	...	1	...	1	...	...	...	...	...	...	...	...	9	
1875	5	1	1	...	1	...	...	...	1	...	...	...	...	...	...	...	...	4	1
1876	12	2	5	1	1	...	2	...	...	1	...	...	...	...	...	...	...	12	
1877	10	4	2	...	1	...	...	2	...	...	...	...	...	...	...	...	...	9	1
1878	14	3	4	3	1	...	...	2	...	...	...	...	...	...	...	...	...	13	1
1879	9	...	3	...	...	2	2	...	1	...	...	...	...	...	...	...	...	8	1
1880	11	3	7	...	...	...	1	...	...	...	...	...	...	...	...	...	...	11	
1881	12	4	5	1	...	...	...	...	...	...	...	...	...	1	...	...	...	11	1
1882	11	5	2	1	...	1	...	1	...	...	...	...	...	...	...	...	...	10	1
1883	14	1	4	...	2	1	2	...	2	1	...	1	...	...	...	...	...	14	
1884	20	2	7	1	3	...	2	...	1	1	...	...	...	...	...	...	...	17	3
1885	12	...	3	1	4	1	...	...	2	...	...	...	...	...	...	...	...	11	1
1886	13	3	...	...	...	1	2	...	2	...	...	...	...	...	...	...	...	8	5
1887	40	6	15	5	2	3	...	1	...	...	...	...	...	...	..	...	...	32	8
1888	29	2	15	6	...	2	...	...	...	...	...	...	...	...	...	...	...	25	4
1889	43	7	6	6	...	3	...	...	...	...	...	...	...	...	...	...	...	22	21
1890	19	1	7	...	5	...	...	...	...	...	...	...	...	...	...	...	...	13	6
1891	37	4	7	7	...	...	...	...	...	...	...	...	...	...	...	...	...	18	19
1892	329	63	18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	81	248
1893	238	28	14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	42	196
1894	45	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	44
	965	151	141	33	25	16	12	6	10	5	1	1	...	1	...	...	1	402	563

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